The Builder.

No. CCXL.

SATURDAY, SEPTEMBER 11, 1847.

KNOWLEDGE is power, wrote the great Lord Bacon. Knowledge is power, complacently exclaimed a dandy the other day, when, strong men having failed, he released a lap-dog from the teeth of a huge mastiff, by quietly administering to the latter a pinch of snuff! As knowledge even in one department spreads, so will crime be lessened, human suffering prevented, happiness be increased, and existence lengthened. Ignorance in matters sanatory slays its sixty thousand victims a year in the United Kingdom;—more than ten thousand of whom are taken from this wealthy, boastful, and enlightened metropolis alone; and knowledge, very simple knowledge would save them. Ignorance, besides, gives illness to 700,000 persons every year; and who will calculate the amount of sorrow, distress, waste of money, crime, and misery, which inevitably follow this death and sickness?* And all this will be prevented by knowledge, very simple knowledge. Knowledge is indeed power!

We say, *will* be prevented, for surely when once men know and are satisfied that life may be lengthened and misery spared, by avoiding one course and pursuing another, they will not fail so to act. It takes a weary long time to make knowledge general. The fact that cleanliness, light, and pure air are essentially necessary for healthy life, has always been known to the few, but disregarded and not believed by the many. Precise evidence was wanting, and the way to obtain it was not seen. General statements went for nothing. Bad air is not visible; its results are not immediate and tangible, and might have proceeded from other causes. When Clarendon said that, on his return to London with the court after the plague of 1665, he missed very few of his friends and acquaintances who had remained behind, "the ravage having, in a great degree, been confined to the lowest orders of the people, who, in that age, lived in circumstances of great filth and foul air," it led to no general alteration, nor did a thousand similar general statements made before and since, as although incontrovertible facts, they carried no conviction with them, nor could their utterers give it.

During these last six years, evidence of a different kind has been systematically obtained: the truth is apparent, and all that is needed is to make this truth universally known and understood. There is evidence enough and to spare,—evidence unshakeable. In certain districts where the drainage is bad, cesspools abundant, the houses dark and confined, fresh air not to be had, out of every 300 beings ten die every year; in another, where the circumstances are better, in the same number only six die.† Improve the drainage of the first, make such arrangements as shall give the inhabitants better air, and to the extent to which this is done the rate of mortality is made to approach that of the second. This is no hypothesis: the fact is established.* When once it is brought home to all the world, much will have been done towards a remedy, but even this will not suffice to effect it wholly. Pecuniary interest, and the willingness men have to take the chance that *they* specially may escape, will war against it, and can be overcome only by the interference of Government. A well considered bill of health it is to be hoped we shall have directly the new Parliament meets, with such other legislative enactments as are necessary fully to obtain the desired end, as, for example, the repeal of the abominable window duties (that tax on light, *health*, and MORALITY), the repeal of the duty on bricks, and a revision of the Buildings Act.†

Lord Morpeth when he withdrew his bill last session said, "he could not conclude without expressing his confident assurance, that the subject had taken such deep root in the convictions of the country, that, notwithstanding the difficulties inherent to the question or the imperfections of the individual by whom it might be introduced, it must command its own success."

And there is no doubt it would. But it will require, in order that we may not be forced to wait till time has overcome selfish objectors, and removed the webs spun over men's eyes by the spider prejudice, that it be framed with ability and care, carried forward with zeal and determination, and persisted in to the last. Let Lord Morpeth nail his colours to the mast, inscribed "Delivery from Disease," and the people will not be slow in rallying round them. To use the words of a writer in *Fraser's Magazine*,—"The intelligence of the country is already arrayed in favour of sanatory reform—the press is unanimous in its support—a respectable fraction of the medical profession is embarked, heart and soul, in the cause—the clergy, who are always cautious in committing themselves, are beginning to exert their powerful influence—associations and branch associations are multiplying on all sides—and everywhere the feeling is spreading and strengthening that all delay in this matter is a crime, and that the health and lives, the comfort and the well-being of the people, have been too long the sport of ignorance and incompetence. Those only who have made the public health a study are in a condition to realise the vast results, physical, moral, and economical, which must inevitably flow from a large, comprehensive, and practical measure of sanatory reform; they alone can catch a glimpse of that better and happier future, of which the faint dawn is visible on the horizon, when all orders of men released from the bondage of physical corruption, and made large partakers, for the first time, in the pure elements which God has provided for the sustenance, health, and vigour of their frames, living in the midst of unwonted abundance, enjoying complete freedom of person and action, shall dwell in security and peace under the gentle sway of a benevolent and paternal Government."

It must be a broad bill and a practicable bill, and it will be THE measure of our times, and will place those who perfect and pass it amongst the best benefactors of the human race.

We are ourselves old labourers in the field of sanatory reform, and have watched with no common anxiety the increase of the interest manifested in this subject by the public. The ignorance, however, which still prevails is immense, and the societies organized for the promotion of sanatorial measures must in no degree relax their efforts to remove it.

Speaking of the recent death of a child in Hayes-court, Whitechapel, poisoned by the effluvium from the want of drainage, which has in that same place destroyed many lives, a leading journal said,—"It is hardly credible that in a metropolis like London, where labour, skill, and capital are all immediately at command, human life should be positively sacrificed for *want of a drain*. Such, however, has been the case within the present week, as will be seen from the report of an inquest in our paper of yesterday."

One life? Why hundreds of lives have been sacrificed for want of a drain. And why should we say have been, alone: hundreds are now being destroyed in like manner,—though more silently and slowly, no less surely. Last week three men, going into a sewer at South Shields to clear it out, were thrown into a state of stupor by the gases in the sewer, and one was killed. A few days ago two men, employed to remove some night soil in Russell-street, Brighton, were overcome by the bad air, and were both taken out dead. These, and several similar instances, all within a fortnight, the public can understand; they can *see* here the work of deleterious gases; but they do not understand, or they pretend they do not, that these same are also more or less destructive of health, though diluted with air something less impure; and under existing want of arrangements these are inhaled by thousands.* Typhus fever, which ought not to be known in England, is one of the results, and carries off thousands annually. Cheap and efficient sewerage, suppression of all cesspools, ample supply of water, the widening of alleys, provision of healthful dwellings for the industrious classes, means of carrying off the products of combustion and vitiated air from all apartments, and of obtaining a good supply of pure air, are desiderata of the utmost consequence to all classes of society. Until we remove some of the enormous physical evils which the want of these involves, we cannot hope greatly to improve the morals or refine the taste of the people.

THE GOVERNMENT SCHOOL OF DESIGN.—The turmoil here still continues; Lord Colborne, the president, the two vice-presidents, Mr. Cockerell, and Mr. Etty, have resigned their seats in the council, so that a *quorum* can scarcely be obtained. The statement by some of the papers that the director had resigned his appointment, is, we believe, incorrect.

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* "One-sixth of the total waste of life and health which takes place in the United Kingdom, occurs in the Metropolis. Now, waste of life includes unnecessary sickness, widowhood, orphanage, funeral expenses, inability to labour, medical charges—it also includes the cost of the increased relative proportion of births, which is found to result from a high rate of mortality, and likewise increase of poor-rates, additional calls on public and private charity for the support of hospitals, dispensaries, and asylums, for the sick and infirm. If an estimate is made of the money value of the losses from a neglect of sanatory measures in London, and if a detailed estimate of Dr. Lyon Playfair, for Manchester, is proceeded upon, it is found that 2,304,531*l.* are wasted every year."—*Report of Health of London Association.*

† We are able to tell why the rate of mortality in London is 1 in 32, while in Liverpool it is 1 in 29. We are able to trace the startling difference to its source. In one of the reports of the Registrar General, it is stated that the metropolis is divided into three groups of ten districts each, under the title of the healthiest, the medium, and the most unhealthy districts. The result is as follows:—Ten healthiest, with an allowance of 302 square yards to each person, have a mortality of 1 in 48. Ten medium, with an allowance of 108 square yards to each person, leaves a mortality of 1 in 41. Ten unhealthiest with an allowance of 22 square yards to each person, leaves a mortality of 1 in 26. Again,—the Rev. Mr. Clay, of Preston, makes four classes of streets:—Well conditioned, mortality among children under 1 year, 15 in 100; moderately, 21 in 100; ill, 30 in 100; worst, 44 in 100, or three times as much as the first; and then we learn from Mr. Chadwick, that in St. George's, Hanover-square, the average age at which the better class die is 45; labourers, 27; St. Giles's and St. George's, Bloomsbury—gentry, 45; Liverpool, working class, 17. Such facts as these must speak to all.

‡ It is stated that in twenty streets in Chorlton-on-Medlock, Manchester, the mortality fell from 110 to 82 per annum, in consequence of the streets being properly paved and drained. In certain streets in St. George's district, Manchester, the deaths in 1838-1839 amounted to 495; but in 1841-1843, after the streets were paved and sewered, the deaths were only 423, being a diminution of 53, or about one-eighth.

† Our recent suggestions for the immediate institution of some specific and determined measure for sweeping away the obnoxious window and brick duties, have been reprinted by our contemporaries all over the country. A pile of letters prove to us how strong the general feeling is against these great obstacles to safety, comfort, structural improvement, cleanliness, and health.

* "It appears that decomposing animal refuse gives rise to three distinct gaseous products, each of which may exert injurious and fatal influences. They are sulphuretted hydrogen, hydrosulphuret of ammonia, and nitrogen. The former two are exceedingly deleterious. They may exist either in combination or separately in the soil of privies and cesspools. When combined they differ little in their effects from those of sulphuretted hydrogen.

Although there are no decided experiments by which we can determine the smallest proportion of this gas which, when mixed with atmospheric air, will destroy life, yet we know that when respired in its pure state, it is almost instantaneously fatal, and that when allowed to remain in contact with the skin, even although a pure air be respired, it will speedily prove fatal. Thenard has found that 1-800 of its volume would destroy a dog, and that one volume in 200 suffocd to destroy a horse. Most certain it is, that an atmosphere, even when only slightly impregnated with this gas will, if long continued to be respired, seriously injure the health of an individual, and cause death."

A TRIFLE FROM BRIGHTON.

Those who can remember Brighton as it was five-and-twenty years ago, may well lift up their hands now with astonishment, and cry, "prodigious!" Such an extent of large showy residences next the sea, *three miles* of them, if we mistake not, and such an esplanade, can be found no where else. It is true, little can be said of their architecture. One is constantly reminded of Colman's "Prig-architect,"—

> "—— Where, still greater lengths of taste to go,
> He warps his tenements into a bow;
> Nails a scant canvas, propt on slight deal sticks,
> Nick-named veranda, to the first-floor bricks;
> Before the whole, in one snug segment drawn,
> Claps half a rood of turf he calls a lawn;
> Then, chuckling at his lath and plaster bubble,
> Dubs it the Crescent, and the rents are double."

Even in the most recently erected houses, the taste displayed is far from the purest; and the absence of professional assistance, except in some few instances, is strikingly and painfully evident. Architects, as a body, receive a vast deal of abuse for matters in which they are in no degree concerned. With the tasty crescents which the rhymer, quoted above, ascribes to "prig-architects," they had in truth very little to do. Indifferent, however, as the architecture may be, the amount of capital and convenience which has been accumulated here in a short time is enormous, and must excite the astonishment of those foreigners who visit the place.

What is to be done with the "Pavilion," that quaint offspring of extravagance and bad taste, seems still uncertain.

> "A palace, of course, you must have for your king,"

wrote Mr. Planché, in his "Aristophanes,"—

> "Nothing easier is 'neath the sun done;
> Only if you would build the right sort of a thing,
> Don't look for a model in London."

And it might be echoed, as every one knows and admits, with still greater force,

> "Don't look for the model in *Brighton*."

Nevertheless we should be sorry to see it taken down, as, apart from the curiosity of the thing, it may serve as a warning to succeeding sovereigns; singing in a powerful voice,—

> "Still follow sense, of every art the soul."

The appearance of the town on approach, instead of being injured by the railway, as was asserted would be the case, is immensely improved. The effect of the curved viaduct for the Lewes line, with its twenty-seven lofty arches, threading the Downs, with the clustering houses seen behind, is exceedingly striking,—in some points of view even magnificent. The buildings on the Brighton line, by the way, with the exception of the main station there, are beyond criticism. If but a small portion of the enormous sums that were wasted in preliminary struggles had been applied under tasteful direction to the adornment of the line, good seed would have been sown in the district through which it passes, and would have produced fruit in due time.

The Brighton council will do well to keep the improvement of the town, and the improvement of the *appearance* of the town, constantly before them, not merely seizing all opportunities to effect it that may occur, but diligently seeking them. Money laid out with this end in view, will return good interest. Above all things, when they do expend money in decorations, or are concerned in the erection of public buildings, let them obtain good professional advice. The gawky and ungraceful fountain on the Steyne (which, like most English fountains, seldom plays, and when it does, in a shy, heavy way, as if ashamed of being caught at it), is one of the most recent instances of the want of such guidance. In many respects Brighton seems exceedingly well governed, and what we have said is not intended in ill part, but suggestively.

Church room appears to be much needed, at all events, during the greater part of the year. A new church is rising near the "Ship," of considerable size, but others would seem to be required. Moreover, a better mode of obtaining the contribution of chance visitors to their maintenance than is now pursued in some of them, is greatly to be desired. We were pained on entering the *Chapel Royal*, last Sunday (the strangest looking apartment, by the way, architecturally viewed, that ever boasted such a title), to be stopped *in limine* by a money taker, who demanded one shilling each from our party, and gave us a check, in play-house fashion, which ought to have procured us seats, but did not, until, with strict adherence to the model, seemingly followed, the pew-keeper had been personally *satisfied* that it was right to keep the promise virtually made by the proprietors at the door. Our business is more with the church architectural than the church ministrant, if we may use the word, but a proceeding of this sort, which raises feelings incompatible with the purpose of the day, really concerns us all.

The railway has opened several easy and pleasant excursions, in which resources Brighton was formerly deficient. A very short ride behind the iron-horse brings visiters or residents, anxious for leafy trees and a rural ramble, to several charming retreats. To the more inquiring, and to our archæological readers in particular, *Lewes*, beautifully situated in a valley amongst hills, offers many attractions. The castle, where the ruins are clean swept and garnished; the priory, though

> —— "scatter'd lie
> The wrecks of this proud pile 'mid arches gray,
> Whilst hollow winds through mantling ivy sigh,
> And e'en the mouldering shrine is sent away;"—

Southover Church and Gundreda's tomb, a beautiful piece of Norman carving; the much talked-of remains of Gundreda and her husband (discovered, as our readers remember, not very long ago); some curious old houses; and Malling Church, whereof the first stone was laid about 1628, by the accomplished John Evelyn, the author of "Sylva," are the most prominent.

On the other side, at the Shorehams, old and new, are two very interesting old churches; and, to go a little farther, *Chichester* and its cathedral may be visited without difficulty, and will amply pay for the journey.

None of our readers, however, who visit Brighton, should omit seeing *New Shoreham Church*; as, besides being full of interest, it is a study of great practical value. It belongs, as all our architectural readers know, even if they have not been there, to that period when the early English style was gradually superseding, or growing out of the Norman. It was originally a cross church of very large size, with a massive square tower at the intersection of the transepts, but the nave, with the exception of one compartment, has been destroyed, and the transepts and choir now form the parish church. The foundations and parts of the nave walls remain, so that the whole plan may be clearly seen; the walls consist chiefly of flints and beach stones. It was commenced wholly in the semi-circular style, but before the church was finished, the pointed arch was introduced, and in the choir obtained predominance. Various alterations followed, and during the perpendicular period (the fifteenth century), windows of the style of that time were inserted. Around the inside of the walls of the choir is a very interesting semi-circular arcade; and in the early pointed work, which followed, the same ornament that appears in the arch of the arcade was adopted, and shews a continuance of progress which is instructive. The early English triforium of the choir is very elegant. The font is Norman. At the east end of the south side of the choir is an "aumbry," and in the north transept is an early English piscina.

The transept and tower retain all their Norman characteristics, but in the top story of the latter, externally, the pointed arch is seen on all four sides canopying semi-circular openings. The exterior of the east end of the church is engraved in Pugin's "Specimens" (Vol. I.). The lower story has three connected semi-circular headed openings, with short columns, and the upper story an elegant early English triplet, with a quatrefoil ornament in the string beneath the cill, of singular design. In the gable above the triplet is a circular window, of the early wheel-form, with semi-circular arches, and small shafts converging to the centre,—out of which grew the magnificent rose-windows of a later period.

The church at *Old Shoreham* is also a cross church of Norman foundation, and has been recently restored, the outside with flints and blue mortar. The chancel is pointed; there is a piscina on the south side, and the rood-screen remains. The arches under the tower are decorated with zigzags and other Norman ornaments. The tower is crowned with a low pyramidal roof.

Bramber Church, only a short distance from Shoreham, is peculiar in having the tower over the chancel. The castle, near it, is a pretty object.

Steyning Church is another curious Norman edifice close by, and has some valuable details. It was formerly much larger. The nave is lofty, and has massive cylindrical columns and enriched arches. The east end is of later date. The tower presents externally alternate squares of ashlar and flint-work. We will not attempt however, to name all the old churches to be found within an easy distance from the town;—we have not even alluded to the *mother church* on the hill, with its curious font, *Chalk Church* down in the valley, wherein there are some interesting mural paintings, discovered a few years ago, and figured in "The Archæologia," or *Hove Church*, which lies in the road to Shoreham. Our memorandum has been pencilled between the "Sad sea wave," and London-bridge, literally and to a greater extent *currente calamo* than Latin ever dreamt of, and pretends to be nothing more than "a trifle from Brighton" with good intent.

PROGRESS OF BUILDING AND PUBLIC WORKS IN PARIS.

The quantity of building going on in Paris at this moment, whether on the part of the French government, the municipal authorities, or of private individuals, is immense. One cannot go into any quarter of the town without being struck with the amount and variety of works doing, and the activity with which they are pushed forward. Here are whole quarters rising above the ground; stone being piled upon stone, and brick upon brick, as fast as they can be carried, while new streets are cutting here and there, houses demolishing to widen others, and paving and gas-lighting, after the most approved methods, introduced into the dullest and apparently most impassable localities. In the meantime, works and edifices of public utility are being proceeded with, which will be both a benefit and an ornament to the city; and renovations, decorations, improvements, and reconstructions are going on as if in rivalry of each other. The gay capital of fashion, taste, and elegance seems to be rebuilding,—to be rising anew out of the ashes of that old Paris, whose dark, dirty, narrow streets,—whose quaint, crazy-looking houses,—whose dull antiquated hotels,—formed so striking a contrast with the splendour and magnificence of some of its public buildings.

In the old time, all works of importance and all buildings of an extensive or gigantic scale were performed on the account of the government, or perhaps, rather at the will of the sovereign. At the present day, although the authorities have immense works in hand, yet in point of fact, far more is now doing in quantity and utility, a far greater amount and share of work is being performed in one year at the will and pleasure of the new sovereign, the people, than was accomplished during many years under the old system. Moreover, whatever public works are carrying on, or buildings erecting by government, have in these days a more direct and positive object of usefulness.

The movement, then, which we have indicated in Paris, is a movement of moral and material progress highly interesting, and presents evidences of prosperity among the people, and of refinement in the appreciation generally of beauty and of art. For not only is there a very general desire for better habitations, and a disposition to remove from the narrow unhealthy quarters to wider and better streets, manifesting itself of late years among the working classes, but the majority of the constructions got up by private enterprise are

indicative of a taste for ornament and decoration, which, in the richer quarters of the town, are lavished with a profuse hand on the exterior of the houses inhabited by the middling classes.

We have works enough giving us exact and beautiful drawings and descriptions of the many public buildings with which the capital abounds; we should like to see one devoted entirely to describing the elevation and ornament of private hotels and houses. These are so numerous and so diversified, that it would be as useful to the builder and architect, as interesting to the amateur. As many as seven thousand new houses are said to have been erected in the capital in one year. The number is very considerable, when we bear in mind, that the majority of the houses are inhabited each by several families. Of these the most richly ornamented are to be found in the centre of the town, often in the midst of dark and narrow streets, standing back from the old ranges of building on the lines laid down in the regulations for the general improvements of the public thoroughfares.

The amount of work thus doing yearly for the material comfort of the population is, as it will be seen, very considerable, and if taken in the mass, of a much more gigantic character than the creations of vanity and pride, and although the materials used may not be, taking them separately, so wonderfully long, and broad, and heavy, as those which toiling slaves by thousands dragged up to their resting-places at the bidding of their royal or priestly masters, some of those daily placing side by side, and piling end on end, are by no means to be despised, and would be worthy corner-stones of greater undertakings than mere private edifices.

The value of the property thus erected is very considerable; and, divided among many proprietors, infinitely more beneficial to the working classes, inasmuch as employment is more regular and certain, and wages have a greater chance of keeping up at a fair rate—a matter of great importance to continued national prosperity. At the same time the labourer can afford to pay better rent, and the builder, confident in the solvency of his tenants, *can afford* to risk more money in constructions better suited for human habitation. All these little matters form, as it were, a wheel within a wheel of prosperity, just as much and as surely as the unprofitable laying out of money, or its too great monopolizing in few hands, becomes a leading source of uneasiness and unhealthiness in the every-day relations between the different classes and interests.

The progress of works of public utility under the direction of the authorities is also very considerable, although for various reasons, not always so active as with us. Where the Government directly interests itself there, every thing goes on rapidly enough, and no money or efforts are spared to accomplish most fully and perfectly objects in view. Public buildings therefore are well and spiritedly carried out. But when the interests of parties and companies are brought in to bear upon enterprise, the jealousy and contentions arising out of them have the effect of retarding public works, and causing considerable loss to the nation. Hence, the progress of works connected with railroads has been slow, although their benefit has been recognized by men of all classes and opinions. Rival interests in existing undertakings, such as canals, public conveyances, &c., and their rivalry between the companies themselves, are among the causes of delay.

A building of considerable extent, and likely to be of much architectural beauty, is now gradually rising by the side of the hotel of the President of the Chamber of Deputies. It is to be the future residence of the Minister of Foreign Affairs, and has attached to it some of the most extensive and best arranged offices that any administration can boast of. The hotel, at present occupied by that department of Government, has been found so inconvenient, that for many years a suitable building has been sought for, or a site, whereon to build one fitted for the purpose, and worthy of that important branch of the public service. The splendid palace on the Quai d'Orsay, built partly of the materials collected by the Emperor Napoleon for the palace of the King of Rome, was found to be too ill-arranged and too extensive for the minister "des Affaires Etrangères," — the minister of "strange" affairs, as a Frenchman, proud to speak a little English, once remarked. It is now devoted to the Cour des Comptes, which had been equally long on the look out for a "locale," and had to be re-arranged and cut up to such an extent, that the majority of its once splendid rooms form now only so many little wooden offices for the employés of the establishment, while the immense mass of archives, documents, and valuable papers belonging to the court, through which pass all the accounts of the kingdom, are piled up in a mass under the extensive roofs of the palace.

On the death of the unfortunate Duke de Bourbon, the palace of the Chamber of Deputies, and the extensive property and buildings attached to it, became the inheritance of the Duke d'Aumale, and were finally bought for the state at, it is said, the pretty little sum of 100 millions of francs! At the same time, immense sums were voted for the construction of a hotel for the Minister of Foreign Affairs, and for the enlargement of the palace of the President, the original residence of the Condés. The works of both hotels have been pushed with the utmost activity, so that the President may occupy the one in the course of next year, and the minister the other in the year following. Already the masonry of the foundations and of the basement story are executed, the walls of the hotel of the Minister of Foreign Affairs being already 25 feet above the ground, and presenting an extent of front of some 300 yards. The palace (for such it is in reality) will present a rich colonnade towards the Seine; and some opinion may already be formed of the imposing character of the edifice and the grandeur of the style, although only now arrived at the height of half way up the first story. The offices extend along the Rue de Téna and the Esplanade of the Invalides; they are at this moment as high as the third story above the ground-floor. Their length towards the street is some hundred and twenty yards. It may be said to have two fronts, one towards the street, and another towards the court and garden of the palace, with two grand entrances, or *portes-cochères*, from the street. There are six-and-twenty windows in a line, opening upon the front, and twenty-four upon the court. Turning the corner into the Rue de l'Université, we come to that portion of the building intended for the archives, or records of the administration. It is a simple yet massive-looking erection, without any windows apparently towards the street: the works are very far advanced. Massive walls between the garden and the court of the offices, to the extent of sixty yards, are completed; and also a portion of the wall of separation between the offices of the Chamber of Deputies and the new hotel. Already two considerable divisions of the Esplanade of the Invalides have been occupied by the workmen; and it is now said that the Minister of War is about to grant permission for the use of another, upon which they may deposit the materials necessary for the works, and erect workshops. In short, nothing is spared to facilitate the progress of the constructions.

The Hôtel of the President is terminated, in so far as the heavy work is concerned: plasterers, carpenters, and decorators have now to do their part, and complete it for habitation. The original hotel had but one story; another has been added to it, and a roof, covered with zinc, containing rooms for domestics. It presents a range of thirteen windows towards the river. A beautiful gallery has been constructed between the hotel and the Chamber of Deputies, to form a passage for the president. The edifice has now a much more imposing aspect than it had formerly, without any great pretensions to architectural beauty, or to boldness or originality of design. A balustrade runs round the top, concealing a portion of the roof, while vases and groups of small allegorical figures ornament the angles, and add not a little to the elegance of the façade. When all these constructions are terminated, the sum of money spent by the country within these fifty years upon this palace and its dependencies, will scarcely amount to less than two millions sterling.

It appears that a depôt is constructing for the archives of the Cour des Comptes, to which we have already alluded, within a short distance of that building, but it will not be finished before the end of 1848, or beginning of 1849. A stamp and registering office are also preparing, and are expected to be ready about the same period.

The Sainte Chapelle is progressing rapidly, and is expected to be entirely completed in 1849. A public exhibition of stained glass windows, intended for it, is now open at the Palais des Beaux Arts. Some of them are of a very elegant character, and of beautiful effect.

It is useless to give a description at the present moment of all the works in progress on public buildings; they are too numerous—we will merely mention a few more:—The Palace of the Institute is expected to be finished in 1849; the works at the Chamber of Peers scarcely before 1850; at the Ecole des Mines in 1852; at the Ecole Royale des Beaux Arts, the amphitheatre of anatomy is constructed; the Ecole Normale nearly finished; the Bibliothèque Sainte-Geneviève is advancing; the masonry will be completed about 1850. The enlargement and restoration of the Conservatoire des Arts et Métiers will be completed in 1850; the works at the Royal Observatory, in the course of this year; those of the Archives of the kingdom in 1849; those of the Ecole des Ponts-et-Chausées in the course of this year, &c. &c.

One of the great arches of the Salle des Pas-Perdus has been lately propped up, owing to its shewing signs of giving way, a rent of a considerable extent having manifested itself, as already mentioned in THE BUILDER; workmen are also perched up on the historical tower of the Palais of the Conciergerie, overlooking the river, for the purpose of repairing and restoring it.

THE PAST FORMS OF ARCHITECTURE.*

IT may be considered as a kind of traditional opinion to derive the origin of architecture from the construction of the first hut. As to the mechanical parts of architecture this may be right, but surely not, if we consider it as an elegant art. The efforts directed to the satisfaction of a merely external want may gradually produce comfort, nay luxury, but not a fine art. Art is the child of enthusiasm, and when once sprung to light, she produces enthusiasm in every feeling heart.

Therefore the architecture of every people becomes not art till it is devoted to religion. But when it takes a certain character, totally agreeing with the spirit of the religion it serves, it displays itself,—rises to the highest pitch with the display and rise of the worship to which it is devoted,—and falls with it, when, giving room to a purer religion, this worship sinks down into dust.

In this way the resemblance of the different architectures of the pagans, which is yet so embarassing to the inquirer, will be clear of itself. It was in the main the same idea which these different nations strove to realize in their architecture; therefore it resulted that the principal forms of their buildings were the same.

How various soever be the particular systems of religious ideas among the different pagan nations, they all agree in these two points; that their notions of the Supreme Being and future life are only earthly, and in no respect passing the limits of sensual conceptions.

The correlate of the idea of the Supreme Being is in architecture the temple, and that of future life the sepulchre.

Therefore not the habitations of the living but the habitations of the gods and the habitations of the dead bear the first marks of a dawning taste in architecture. Not before this taste has grown to a certain height, is it imparted to the habitations of the kings, the gods of earth, and then, according as nations advance in civilization, it is imparted to all other buildings which are not merely instrumental to the satisfaction of vulgar necessities.

In this manner, if we trace the first marks of a taste in architecture, we find among all heathen nations at first the form of the pyramid, as well for the temple as for the sepulchre. Its form is to be found as well in the buildings of this name in Egypt, which fill the whole world with the report of their greatness, as in the huge barrows or cairns of the north of Europe, in the terraced edifices of the Babylonians and Persians and the pagods of the

* From "System Eines Neugermanischen Baustyles." F. W Horn, Architekten. Potsdam, 1847.

former Hindoos; it appears in the gigantic Morais on the island of the South Sea, as well as in the Teocallis and monuments of Mexico and North America.

Thus, wherever in the primitive time the conception of man breaks at first from the ordinary appearance of things to represent a higher idea, the pyramid is the form of such a monument. It belongs to no determined age, but it indicates the first beginning of art among all nations. It is the rough but vigorous expression of a new-awakened internal life, the true image of a mind which has become capable of a higher strain. It roots with its broad base in the earth, as the natural man, how much soever he elevates his mind, is not able to break from the earthly world to which he is bound by a thousand chains; it terminates after the immense start it takes soon in a petty point, not nearer heaven after all than before, as paganism, even in its highest ideas, does not attain the really divine. Their interior is, like the heart of the heathen, narrow and dark, and almost totally filled with earthly matter. But one idea is expressed in these venerable monuments of the infant ages which elevated them to the rank of art in their time, and secures them this honour in all times,—the idea of the aspiration to a higher world.

As the ancient inhabitants of the plain countries approached the sublime nature of the neighbouring mountains with their industry, they were overwhelmed, as it were, by the sense of their impotency, and, therefore, gave up the attempt to form the exterior, but only to devote the more energy to interior form. The bare hollow in the interior of the pyramid, till then unheeded, now gained such an importance that, stripped of its covering shell (of the pyramidical form), it became the subject of a new strain, and gave rise to a new style of architecture. It grew to the organized structure of the rock-temples, while the exterior of the pyramid was replaced by picturesque rocks.

As architecture in the pyramid style grounded her form on the earthly substance, so now she begins a struggle against it. If the building rooted there with its large base, as if it was yet a part of it, so it now operates with a repulsive power. Though quite inclosed by the earthy substance, she now produces a separation in it, pushing back the walls and raising the upper side, the weight of the mass (we may compare it to the labours and sorrows of earth) rests no more on earthy ground, but is resisted by pillars which energetically rise, breaking from the connected mass of the bottom, a beautiful image of the aspiring power of the spirit in opposition to the downward tendency of an earthly mind.

Totally shut up from the outer world, this peculiar architecture displays an admirable greatness. On approaching the entrance, often hidden, often visible but bare, the uninitiated will not fancy what a splendour will be disclosed in the interior of these rocks. Thus awakes in the mind of the natural man, hidden from the outer world, the first motion of the spirit; it opens in his soul a new, higher, intellectual world as much as the rock of the earthly mind is broken. Not till this new architecture has got her accomplished form, she reappears in the outer world; first, I might say, with a certain coyness, but afterwards in a very decided character.

First, we find an indication of the inner system in light outlines on the even hewn surface of the rock at its entrance; afterwards, the mere outlines are replaced by projecting mouldings, corresponding with the interior architecture, till at last the interior structure, by removing the surrounding masses of the rock, presents itself in its most important parts totally as an open building.

But by this step rock architecture deviates from her peculiar character, and advances irrevocably to her decay. But she has bred the germ of a new shape of architectonical forms: she has brought to light the *pillar*, which becomes the principle of a new system, *column architecture*.

While in the excavated temple the massy pillar performed the mean duty of a bearer, it now becomes, in the nobler form of the well-proportioned column, the ruling character of the architecture of antiquity. Stone columns of more slender proportions, erected in a harmonious order, support the covering structure of beams and plinths, or plates of the same material; surrounded by walls, the whole yet totally shews the character of the former rock architecture in its interior, though its proportions are much nobler and lighter, while the exterior, by the convergence of the walls, though nobler by approaching the vertical line, bears yet a slight resemblance to the primitive form of architecture.

One people alone was able to ennoble these forms to the highest point, to give them that perfection of which the expression of earthly beauty is in any way capable. While other people, in forming the proportions of column architecture, indulge in the most unprincipled extravagance, we see in Greek architecture how the fine taste of this people has traced the bounds which none can safely transgress.

Now a new extraneous element, the semi-circular arch, enters the decaying system, serving the worn forms as a strong support. Of obscure origin, and in her first youth only employed in the meanest services, this form appears even here in the shape of a servant. Resting on its own piers, which give the necessary addition of strength to the weak columns, the strong back of the arch itself bears the entablature, crowning a structure incapable of supporting itself by its numerous columns.

All the systems of architecture we have hitherto considered belong to paganism. They all have a common characteristic, that of being equally productions of a mind who studies to give sublimity or beauty to architectural forms merely by their impression on the senses alone. This characteristic is particularly evident, when we observe, that in all these systems the ceiling is horizontal, or where this simple construction will not be sufficient to cover a room of some extent, it is superseded by leaving an opening. It must be owned, already in very ancient rock temples, treasure houses, doors, &c., we find forms of the covering parts which very conspicuously approach the form of vaults, and in this manner presage a much later phase of architecture; yet in this work of so remote an antiquity, our interest is excited only by the appearance of the form, laboriously produced either by taking away a part of the solid mass, or by horizontally projecting layers of stone. But there is nothing but the form, not the higher principle, originating in an inherent necessity, not the idea which elevates the vault to a peculiar organized system of architecture.

MANUFACTURE OF PLATE GLASS.

In promotion of a plate glass company, recently established, Mr. Howard has published some additional details as to the manufacture of plate glass in 1819 and 1847, shewing the reduction in price, and the increase in the quantity sold produced by taking off the duty.

In 1819, when the rate of excise duty was 98s. per cwt., and average selling price per foot 20s. to 25s., the number of feet sold per week was about 3,000; in 1827, duty 60s. per cwt., price 10s. to 12s., the quantity was 5,000 feet; in 1836, duty 60s. per cwt., price 8s. to 9s., the quantity was 7,000; in 1845, duty 63s. per cwt., price about 6s., quantity 23,000 feet; and in 1847, duty free, price is about 5s., and the quantity 70,000 feet.

The number of hands employed in 1836 was estimated at 2,500; it is now 12,000.

The continental manufacture of this article is chiefly carried on in France, Belgium, Bohemia, Bavaria, Prussia, and Russia. That of France ranks next the best English make, both in colour and brilliancy; but the productions of Belgium are not in any respect equal to the French; and the Prussian also is much inferior to the latter in both these points, as is also the Russian, which is of a very dark colour, and of a more imperfect character generally than any of the others. The Bohemian and Bavarian is blown glass, which, from the nature of the process it undergoes, cannot be rendered so perfect as that which is cast. It is also limited in size and very thin, and is, therefore, unsuited to the general purposes for which plate glass is chiefly used in this country, as well as elsewhere.

For some years the English plate glass has been considered the best manufacture of the kind in Europe, both in colour and brilliancy, and it can be rendered much superior in finish to any now made. The entire remission of the excise duty, which is no longer permitted to fetter native industry with obstructive restrictions, will now enable the British manufacturer successfully to compete with the foreigner, even in his own market.

It will be seen that, while from 1827 to 1847 the reduction in price was from 12s. to 5s. per foot, or about 60 per cent., the increase in consumption has been from 5,000 to 70,000 per week, or 1,400 per cent.! This fact ought to speak trumpet-tongued to many besides plate-glass manufacturers.

THE CONSTRUCTION AND PRINCIPLES OF TIMBER BRIDGES.

The knowledge of the principles of pontine architecture, and the various methods of construction applicable in bridges of stone, iron, and timber, has perhaps at no period been so frequently called into exercise, as during the time of our immediate recollection. Always important amongst the public works of nations, bridges have, since the invention of railways, been the occasion of an amount of skill in design and labour in construction, with which no previous epoch can be assimilated. Great as may have been the difficulties of construction in many remarkable works in mountainous districts, and where the fury of sudden floods, such as are hardly known in England, has to be anticipated, it is perhaps within late years only, that bridges have had to be constructed, with so little means of escaping from difficulties which it should be the object of the architect never needlessly to encounter. It is desirable, in commencing any bridge, to select carefully the point for crossing, where the stream is least liable to swell with sudden floods or tides; to cross at right angles; to allow no other consideration except stability and freedom for the streamway and navigation, to interfere with the number and size of the piers and the form of the arches. These have till lately, been generally matters for consideration; but in railway bridges, the position, direction, level, and almost every other similar adjunct, are requirements which allow no opportunity for choice; and the consequent frequent employment of iron bridges has induced many remarkable inventions in that species of construction.

But it is not only in the materials of stone and iron that the construction of railways has led to important improvements in bridge building. Some of the most ingenious works on several lines are their timber bridges. Long viaducts are constructed of timber, where at the commencement of railway construction they were usually of stone, and the material is now so well framed and protected from the influence of the weather, that its durability does not suffer so much as might be expected, from a comparison with stone, whilst in cheapness, it has, when a considerable number of bridges have to be executed, of course very important advantages. It is found more advantageous to make such repairs as a timber bridge may occasionally require, and gain the interest of money, than to expend a large sum upon a stone bridge, which may last many years with but little attention. In America, where timber is plentiful, such considerations have more importance than in England, and many new principles of construction have been employed there with great boldness and skill. One modification of a familiar principle of framing, which we believe has not hitherto been seen in this country, forms the subject of our illustration, for which the drawings were procured expressly for this journal. The bridge, of which the elevation shews one span, crosses the river Richelieu, a branch of the St. Lawrence, at Chambly, near Montreal, in Canada, and was erected at the expense of Mr. John Yule, of that place, to whom we are indebted for the particulars subjoined. But before describing the construction of this bridge, it may be useful if we give some general particulars of the history and principles of timber-bridge building.

In bridges of timber, besides the variation which may be made in the arch, or framing supporting the roadway, there are two important distinctions in construction. Either the piers may be made of stone, as they are in the example we have engraved, or of timber-framing, as in Battersea-bridge, and in several others over the Thames. These bridges are,

however, not to be adduced as examples for imitation, being of that description, in which excess of material supplies the place of calculation and knowledge of the strength of materials. Timber piers should never be employed where it can be avoided, for the alternate moisture and dryness to which they are subjected, renders them in a constant state of decay. Some saving is effected by driving separate piles, the heads of which can be always beneath the surface of the water, and erecting the piers upon them; thus, repairs can be conducted with much greater facility, and there is no occasion to remove the piles, which are preserved by the constant immersion. But it is at best an objectionable method, and the piers are also subject to injury from ice and the passage of vessels, though precautions may be always taken for protecting them from these latter injuries.

The bridge of Sublicius, which existed at Rome in the reign of Ancus Martius, about 500 years before the Christian era, is the oldest wooden bridge of which we have any account. It is said to have been put together without iron or nails, and could be taken to pieces. Cæsar's bridge, erected in ten days for the passage of his army across the Rhine, is described in his "Commentaries," but not with sufficient clearness to admit of a satisfactory restoration of the design. Alberti, Palladio, and Scamozzi have all made the attempt, but their representations are very different. Trajan's bridge over the Danube, from the representation upon the column, would appear to have been of a more advanced system of construction. Each arch, believed to have been upwards of 100 feet span, was formed of concentric curved ribs of timber, connected by radial pieces. The piers appear to have been of stone.—During the middle ages, timber bridges were frequently employed. They were built on piles, which were so numerous, as to oppose considerable resistance to the current, so that, notwithstanding the means taken to protect them, they were not unfrequently carried away by floods. According to Tredgold, who has devoted considerable space, in his work, to this branch of carpentry, Palladio was the first architect who made any important improvement in the construction of timber bridges. In his treatise on architecture, he first illustrated the principles of several methods of construction, upon which some of the most important works of modern times are merely modifications. He is also considered to have been the first who made the important changes in construction by which a considerable number of piers could be dispensed with. In the bridge which he erected over the Cismone, near Bassano, there is but one span, which is 108 feet. It is a modification of the ordinary queen-post truss. To him is also attributed the system of construction, in framed *voussoirs*, an arrangement of diagonal tracing, acting in similar manner to the voussoirs of a stone bridge. In the bridge over the Brenta, which has four piers, and is in length 194 feet, the principal support is given by struts butting upon the ends of one horizontal piece, in the same way as the principals and collar of a queen-post roof. The bridge, like many in Switzerland and Italy, is covered, having a colonnade for the support of the roof. It has been doubted whether covering a bridge increases the durability sufficiently for the additional outlay; but apart from the advantage of such protection for the passenger along an exposed situation, it can hardly be questioned that in mountainous countries, and where avalanches are to be expected, a roof may often prevent the way being impeded, if not frequently the entire destruction of the bridge. Of later methods of construction, applicable to timber bridges, the most important is that in which curved ribs form the support, and which was first recommended by Price in the "British Carpenter." He proposed to make the rib with a rise of about one-sixth the opening, dividing it into any convenient number of pieces, each rib, for a bridge of 36 feet span, consisting of two thicknesses, each three inches in thickness, keyed together with wooden keys and "breaking joint." A further modification, lately used for large viaducts in the north of England, is that so frequently employed by Wiebeking, in which, instead of forming the curved ribs of short lengths, pieces of considerable length, bent to the form of the curve, are employed. The ribs are usually composed of several thicknesses, bent over each other in concentric curves, keyed or bolted together. A further improvement for large spans, is by employing two of these ribs placed some distance apart, diagonal bracing being inserted.

The variety of forms in which the different principles of framing are found in timber bridges, in all parts of Europe and America, is very great, and we shall perhaps best dismiss this part of our subject by referring our readers to Mr. Cresy's "Encyclopedia of Civil Engineering," where considerable space is devoted to this branch of architecture. In that work, and in Tredgold's "Principles of Carpentry," some of the methods in use, and the gradual eduction of one from another, are clearly elucidated. They may be thus enumerated:—First, omitting the simplest form, in which the span is so narrow as to require merely timbers laid over the opening, we have the form noticed first as used by Palladio. In this, a tie is the important characteristic, consequently, it can be used without much provision for abutment: struts radiating from each end of the tie, support a corresponding continuous timber above, from which depend timbers or rods for the support of the tie. Many bridges have been built on this principle in Switzerland, where carpentry is well understood. That at Schaffhausen, constructed in 1757, by a village carpenter, had two spans, one, 172 feet, and the other, 193 feet, with a stone pier in the middle; the construction displayed remarkable skill, nevertheless it proved that the oak beams which rested on the masonry of the pier and abutments, had not been sufficiently seasoned, nor disposed so as to admit of a circulation of air round them. They became rotten, so that it was necessary to raise the whole structure by means of screw-jacks, and to replace the decayed timbers with others of sound quality. It has been considered to be a defect in this bridge, that all the principal supports are so dependant upon each other, that no portion could be removed without great difficulty; still, and although, as it has been stated, "a man of the slightest weight felt it almost tremble under him," it remained forty-two years, until it was burnt by the French army, without requiring any other repair than that already mentioned. When the immense outlay required for the maintenance of a bridge such as that of Westminster, commenced little more than one hundred years since, is considered, it will not be thought, that the lighter material contrasts unfavourably with stone. The next variations in construction are when the abutments are adequate to resist the thrust. One of these, also used in Switzerland, is where struts are inclined from the abutments, parallel to each other, to support the roadway at the centre, and intermediate points. These struts are strengthened and supported at intervals, from the roadway, by perpendicular timbers. This principle, however, requiring long timbers, which are sometimes obtained with great difficulty, has had frequently to be modified on the principle of butting timbers end to end, adopted by Palladio in the bridge over the Brenta. Other modifications of that principle are when the arrangment of the supporting combination is in four or five pieces instead of three. The arrangement has, however, great objections, and is little calculated, by reason of the difficulty of giving sufficient strength at the joinings, to resist a variable load. The bridge at Walton, and that at Sault, on the Rhone, which failed, the first in twenty years, and the latter in thirteen years, would argue against the use of this kind of framing.

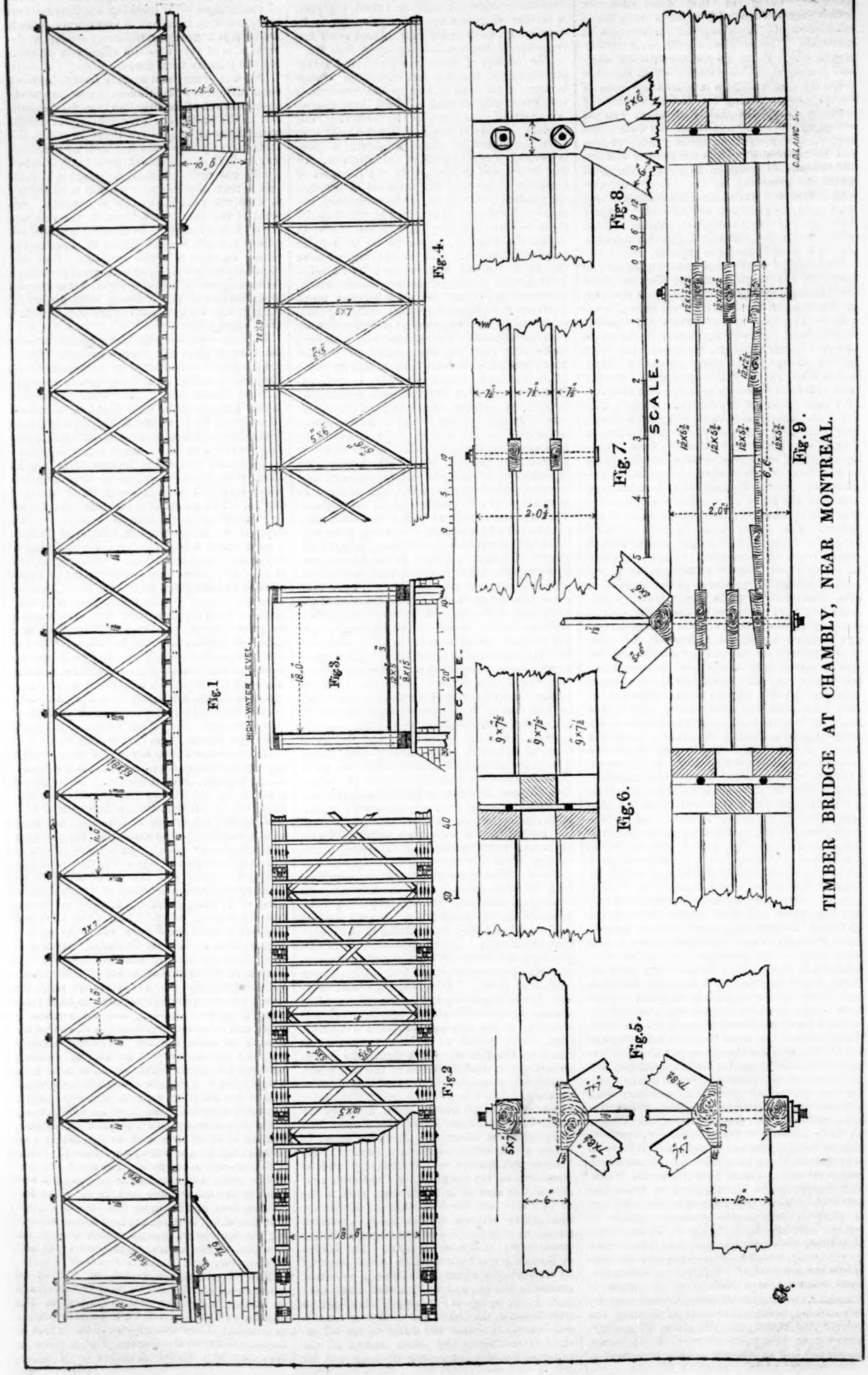
But the use of curved ribs, arranged in either of the methods already mentioned, does not possess the disadvantages to be found in beams which merely abut end to end. Of the bridges constructed by Wiebeking, that at Bamberg, on the Reignitz, in Germany, consists of one arch of 208 feet span, with a rise of 16·9 feet, and the description of this bridge and others erected by the same architect, should be read by all who are engaged in the construction of timber bridges. The bridge at Bamberg was built in 1809. The joints of all the parts, built into the abutments, were well soaked in hot oil, and also covered with sheet-lead. In the bridge at Freysingen, small gutters were made at the lower end of the curved ribs and braces, to cause the water to run off instead of settling in the joints, and to all the principal timbers, two coats of pitch and tar were applied. It is to be regretted that many of the bridges by Wiebeking are boarded over and painted in imitation of stone-work, which, whilst it is a most unsatisfactory attempt at deception, is of very doubtful efficacy in preserving the timbers from decay.

The use of diagonal bracing framed between concentric ribs of continuous timber, seems to be the method of construction in most cases entitled to the preference over others.—Amongst other kinds of bridges are those in which the arched rib springs from the level of the roadway, which is suspended from it, a method which has many advantages, where it is difficult to form abutments, or when it is necessary to keep the roadway as low as possible. Several of the new iron bridges on the railways are on this principle. In foot bridges the requisite strength is often gained by trussing the railing on each side the roadway. Iron has been frequently employed with great advantage for suspension in timber bridges, either various modifications of the ordinary principle, or in long beams requiring no other support, as a truss beneath them.

It is in America that the greatest novelty has been displayed in timber bridges. These are frequently constructed of arrangements of diagonal bracing, and have great strength without lateral thrust. In what are called lattice bridges, from their appearance resembling lattice work, a span of 150 feet can be covered without difficulty: materials of small scantling are required; the lattice framing for a span of 80 to 150 feet, being formed of fir planks about three inches in thickness and 12 inches wide, arranged to cross each other at right angles. The points of intersection are united by oak tree-nails, 1¼ inch in diameter. The depth of the lattice-work in bridges of 78 feet span is about 9 feet 6 inches: the roadway is supported along the top by a longitudinal rib at each side; these ribs are connected by cross timbers and diagonal bracing. The greatest care is requisite to have the timbers well seasoned. Such bridges have been constructed of great extent; one on the New-York and Hærlem railway is said to be 736 feet in length and has only four stone piers. Long's American bridge, which bears a nearer resemblance to the one we have engraved, has, like it, an arrangement of diagonal bracing with upright posts, framed between string-pieces, each formed of three timbers. It differs however, in some important details, from that at Chambly.

The inventor of the method of bridge building represented in the illustration, is Mr. Howe, of Springfield, Massachusetts. He obtained a patent for the United States, which he disposed of to Messrs. Boody, Stone, and Co., who erected the bridge at Chambly, and have built a number on the same plan for railways of much greater span. The original design in this case, was for a bridge of 960 feet in length, having five piers and two abutments, but an error having been discovered in the measurement of 77 feet, there are actually six piers, one of the spans being 77 feet. The piers and abutments have also been raised three feet higher than as at first intended, which has been done by adding masonry beneath the chords, or string-pieces, as shewn in the transverse section, fig. 3. The piers are all in the water, which extends from bank to bank; the river is seldom flooded, but the current is swift, and substantial masonry is of course necessary to resist the ice. The specification required the masonry to be laid in courses, between 12 and 24 inches thick, so as to form a solid mass, in hydraulic cement, in the proportion of two parts of sand to one of cement. The piers to be 6 feet wide, by at least 23 feet long at the top, exclusive of a triangular ice-breaker, and are battered one inch to the foot, on all sides except on the cut-water, where the batter is four inches to the foot. The up-stream end of the piers was specified to be dowelled one stone to the other above and below it on the ice-breakers, and five or six feet past the angles. The dowelling to extend to high water, including the foundation course, which was to be dowelled, in like manner, to the rock in the bed of the river.

The superstructure was to be framed in spans about 154 feet to 160 feet: the trusses to be 18 feet high from top to bottom of the chords, and 22 feet 1 inch wide from outside to outside. The carriage-way to be 18 feet in the clear between the trusses, and divided in the centre by a timber, 5 inches by 8 inches,



TIMBER BRIDGE AT CHAMBLY, NEAR MONTREAL.

running lengthwise, fastened to the floor-beams by treenails. The dimensions of the main timbers are given as under:—

For the bottom chords—4 pieces, 5¾ inches by 12 inches each.
For the top chords—3 pieces, 7½ inches by 9 inches each.
For the main-braces—2 abreast, 7 inches by 8½ inches each.
For the counter-braces, 7 inches by 7 inches each.

These braces are bolted at the point of intersection. The chords were to be coupled together, perpendicularly, with screw-bolts, which were to be of these dimensions:—

On the piers and abutments ..	1¼ inch.
In the first five spaces, counting from the piers and abutments ..	1½ do.
In the remaining three spaces of each span	1⅝ do.

All these were to take their bearings on oak cips or transoms, the size of which was to be 5 by 7 inches. The posts and braces on the piers and abutments were specified 6 by 8 inches, and the floor-beams, 5 by 12 inches. The whole of these timbers were to be of the best white pine. The floor-plank, 3 inches thick, was to be of good hemlock. This kind of timber is inferior to pine; it splinters, and does not last so long. The trusses were further specified to be coupled from side to side with screw bolts of 1¼ inch diameter, and braced laterally with timbers of 5 by 5 inches and 5 by 6 inches, and tied, at the top, with oak timbers, 5 by 7 inches, and there braced, laterally with timbers 5 by 5 inches and 5 by 6 inches. The 5 by 6 timbers were to be of full length, but the others were to be cut off at the intersection, and attached by dowels. The several pieces of the chords were to be coupled together with ¾ inch bolts, 2 feet 2 inches long, as shown on the plan, giving the "upper side view of top chords, &c.," fig. 7. Vertical keys were also to be inserted in the spaces between the timbers, those keys to be 1 foot square and 2½ inches thick, as shown on the plan, giving the "top view of bottom chord, &c.," fig. 9; also an oak coupling clamp, 6½ feet long, to be inserted at the ends where the two timbers meet (the notches to be 1¼ inch deep), to prevent the chords from gliding. Suitable plank was also specified for protecting the trusses from wheels, and directions were given for the returns of masonry at the abutments.

The long spans of the bridge have a camber of 8¼ inches. No method has been taken to preserve the timber, but it is to be roofed over shortly, which it is expected will have the effect of preserving it. We believe it is intended to try the asphalted felt. The bridge will also be boarded up on the outer sides, to within 2 or 3 feet of the top chord, and the roof made to project considerably.

It will thus be seen that the bridge is a piece of construction in timber, which might call to mind Mr. Stephenson's project for the Britannia Bridge, at least in its appearance, when passing over it. The section, fig. 3, and the plan, fig. 4, show that it is braced over head, along the whole length of the bridge.—It may be necessary to mention that the pieces which receive the ends of the girders, are merely blocks extending across each chord, and not from one chord to another. In fig. 5 the timber at the top figured 5 by 7 is the end of a continuous timber; the corresponding piece at the bottom is merely a block through which the bolt passes.* To our inquiry as to the composition to be used for the flooring, we have been informed that gravel and tar are to be tried. In most countries timber bridges are paved on gravel, or covered only with broken stones or gravel, in all which cases means of conveying off the water should be carefully provided. Sufficient moisture will, however, always pass through the covering to rot the planking, and in many bridges it has been thought better to lay a second layer of planks, which would in that case be transversely, to prevent the feet of the horses sliding. When the planking is left uncovered, longitudinal planking, as in the bridge at Chambly, will, however, be found most economical, as those planks which are most worn at the horse-track and the course of the wheels, can be replaced, whilst the other portions which are not worn, can be made to last several years. We subjoin a list of the diagrams.

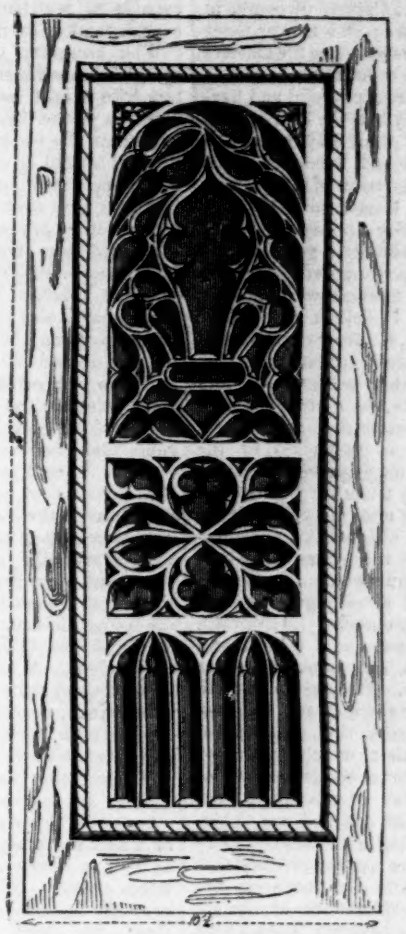
Fig. 1. Elevation of one of the trusses; span, 153 feet.
Fig. 2. Plan of bottom chords and bracing, with a portion of the planking of the roadway removed.
Fig. 3. Transverse section of the truss.
Fig. 4. Plan of top chords and bracing.
Scale of the above figures, one-sixteenth of an inch to the foot.
Fig. 5. Elevation of top and bottom chords.
Fig. 6. Underside view of top chord.
Fig. 7. Upperside view of top chord, shewing keys.
Fig. 8. Upperside view of top chord, shewing bracing.
Fig. 9. Top view of bottom chord, shewing bracing, keys, clamp, and blocks.
Scale of the last-mentioned figures, half an inch to the foot.

* Some trifling omissions in the drawing forwarded from Canada have remained uncorrected. The lines of the bracing above the top-chord, and the blocks beneath the bottom-chord, should have appeared in the elevation. They are shown correctly in Fig. 5. There is a 1¼-inch bolt close to each perpendicular timber, over the piers, and the braces have bolts at their intersection, as described. In all other respects, the engraving is perfectly accurate.

British Lying-In Hospital.—The governors of this institution have obtained a site contiguous to the hospital, in Endell-street, Long Acre, and are about to rebuild it. At a recent meeting, it was resolved that the plan of the building submitted by Messrs. Fuller and Gingell, architects, of Bath, should be adopted. The elevation is to be in the Elizabethan style, and the cost is estimated at 4,000*l.* The price asked for the land, which they have taken on lease for eighty years, at 40*l.* per annum, is 1,200*l.*

Granary Floors.—A correspondent of the *Bedford Times* remarks, that while wheat on brick floors may be infested with weevil, the substitution of fir or larch will effectually keep out insects. That it is the resinous odour emitted by the wood that does so seems evident, as turpentine has been found to produce the like effect, and resinous boughs of thurga (pine or larch) and Virginian cedar thrust into sheaves of blighted wheat, will cause the weevil to rush out and seek other refuge.

FONT CASE, TICEHURST, SUSSEX.



CARVED FONT CASE, TICEHURST, SUSSEX.

Above, we give a representation of part of the Font Case, at Ticehurst, in Sussex, a very elegant and curious example of panel tracery. The great variety, and yet conformity, to be found in the tracery of the Gothic artists appears at first sight extraordinary, but ceases to be so when the principles on which it was constructed are understood. Geometry regulated it wholly, and made the operation of design an easy one.

SHORT TIME MOVEMENT.

MEETING OF OPERATIVE CARPENTERS AND JOINERS.

An assembly of between 600 and 700 workmen, with a sprinkling of their employers, met on Tuesday last, at dinner, in Cremorne Gardens, to celebrate the success of their peaceful movement; or rather, with the still more commendable and grateful object of "recording, by a public vote of thanks, the sense of respect they have for those employers who came forward so readily to grant the four o'clock privilege." And certainly the sentiments of the speakers, and the enthusiasm with which those sentiments were responded to by the numerous and most respectable and orderly assembly, rang in our ears as something very different indeed from any thing we had ever heard of, or witnessed, in the exhibitions of the dogmatical advocates of the *striking* system of former days.

The business of the meeting was opened by the chairman, Mr. Bates, an operative carpenter, who congratulated his fellow workmen on their meeting in so strong a force for a purpose, to promote which, he believed, the trade had never before congregated together, namely, for the promotion of good feeling between employer and employed. Of course it was not to be expected that the immense number of persons connected with their trade in the metropolis could all be present, but he could

assure them of the best sympathies of the absentees.

A list of more than 100 masters who had already granted the privilege of leaving work at 4 o'clock on Saturday afternoon was then read over by the secretary, Mr. Carter, of course in the midst of great applause; and two or three letters, out of a number received from the masters themselves, were read, in order to shew that in this meeting, to celebrate so peaceful and harmonious a movement, they had the best wishes and cordial approval of their employers. A brief retrospect of what had been done was also reported, and the resolution of the evening was then moved by Mr. Carter to the effect, that "This meeting, fully appreciating any measure that tends to promote a good understanding between employers and employed, do accord a vote of thanks to those who have so generously granted the 4 o'clock privilege." They had not assembled, he observed, to celebrate a triumph, but gratefully to testify their respect for, and to do all in their power to promote a good understanding with, their employers as a body, as well as to promote that principle of conciliation which was so important to the interests not only of those present, but of all the members of every trade throughout the country. Any reflecting man must see that the organization which had effected this improvement had grown out of the general spirit of progress throughout the whole of society, —that spirit which had already given rise to our athenæums, our mechanics' institutions, our baths and washhouses, our benefit and building societies, and our associations for other desirable purposes. He was glad to see that they moved with the spirit of the times,— that they had cast aside the old trades' weapons,— that the spirit which generated strikes and brought them enemies instead of friends, and misery instead of advantage, was now passing away like the spirit of war, while a better spirit was coming over them. They now saw that strikes were a great evil, and that besides the moral evil and the pecuniary loss arising from them, they were a source of constant antagonism and hostility between those whose interest it was to work to one another's hands, instead of in a way which was most prejudicial to both. After eulogizing those few influential masters who had first granted the privilege, and had thus materially promoted its further progress, the resolution moved was seconded by Mr. Cassidy, and carried by uproarious acclamation.

Mr. Gray, master-builder, acknowledged the vote of thanks for himself and for others, who had authorized him to do so. The feelings of the employers towards the employed, he assured them, were tempered to a great extent with kindness. They were sensible their interests ought to be identified. They wished by all means to promote what the operatives had here met to celebrate. Their earnest desire was to see their common interests identified in future.

Mr. Gray was followed by Mr. Jarvis, foreman to Messrs. Baker, who also assured them of the kindly feelings of the masters towards the men, when applied to in a proper manner, such as had led to the present successful issue.

'Prosperity to the Trade' was then proposed by the Chairman, and was responded to by Mr. Bamber, who said they were now entering on the beginning of a new era in the history of trades, not only of the metropolis, but of all England, and even of the world at large. The peculiarity of this movement was that it claimed for itself a distinctive force and a new character, as greatly opposed to previous modes of procedure as the free-trade movement was to the old system of monopoly. They were as yet but at the beginning of the beginning of a system, which was capable of yielding them all they required for the complete moral, political, and intellectual regeneration of the trades. One prominent feature of this new system was the absence of every thing like compulsion, threat, or revengeful feeling, recourse to strikes, or any thing having the remotest connection with physical force. The importance and the capabilities of this new principle, indeed, in its influence on the future destinies of the trades were not yet appreciated as they would be. It was yet but in embryo. But it would be a powerful instrument in the production of results sought for in vain by other means, by which they never could be accomplished. If they looked to the movements in progress for the improvement of the public health, and the recent speeches of Lord Morpeth and others in high and influential station, at Sheffield and elsewhere, they would be more and more convinced that they were entering on a new era, capable of realizing the most Utopian ideas ever dreamt of by thinking visionaries.

The secretary trusted that this meeting would be a sufficient assurance to those masters who might have otherwise continued in doubt as to the spirit which is now beginning to actuate the working classes. He hoped the masters would give their workmen the frequent opportunity to prove themselves faithful, by trusting in their good intentions; and that having thus proved faithful, they should be more and more trusted. He could not help instancing with gratitude the exertions made by some masters for the good of their men, and in particular by Mr. Thomas Cubitt, who had subscribed 100*l.* to found a library for his workmen, and 20*l.* a year for its increase, and who had established the most perfect arrangements for the comforts of those whose best interests, he clearly perceived, were inseparably identified with his own.

After "the Press" had been proposed, as the advocate of justice to all classes, a vote of thanks to the leaders of the present peaceful agitation was proposed by Mr. Richardson, who reprobated strikes, in which immense sums had been swallowed up without any of those real advantages which they might have otherwise yielded. One strike of cotton-spinners had cost 600,000*l.* and after all, brought only defeat. A sum of 2,000,000*l.* had been thrown away upon half-a-dozen strikes a few years since, nearly all of which were unsuccessful, even in the attainment of their more immediate object.

The meeting was finally addressed by Mr. Palmer, another master builder, who expressed a hope that this was indeed only the beginning of a new movement for the mental and moral as well as physical improvement of the industrious classes. The scrupulous care of public property by these classes, when thrown open to them, had been alluded to by a previous speaker. He hoped that they would exert themselves to secure the opening of the British Museum, the National Gallery, and other national institutions, on the only real holiday they had,—namely, Sunday. Despite of counter assertions, he was convinced that a beneficial moral influence would thus be produced.

THE PREBENDAL HOUSE, THAME, OXFORDSHIRE.

"This ancient ecclesiastical building is situate at a short distance north-west of the church, and, from the style of the earliest part of the architecture, it appears to have been erected about the same period in which the prebend was founded by Grosteste, Bishop of Lincoln, in 1241, who endowed it with the impropriation and advowson of the church of Thame."

At the dissolution of monastic establishments this fell, with others, into decay, and ultimately was appropriated to agricultural purposes. About Edward the Sixth's time the estate passed into the hands of the Williams' family, and thence to the Wenmans', in whose descendant it was vested in 1835 or 1836, when a portion of the property was divided into lots, and offered for sale.

At this time (1836) Mr. Charles Stone, a native of the town, having realized by honest industry a competence, returned, after an absence of some years, to the "seat of his youth," and was struck with the idea of making it a residence. It was then used as barns, stables, and other farming purposes, and was surrounded with hovels and sheds.

The original character of the place may be seen by referring to "Skelton's Oxfordshire," in a vignette at the head of Thame Hundred.

His friends ridiculed the idea of such an "auld houlet haunted biggin;" but the architect whom he consulted having told him, in the words of Brown, that there was a "capability," he purchased the premises, with about fifteen acres, in spite of jeers and owls and "ghaists that haunt auld ha' or chamer," and in 1837 proceeded to convert it into a residence, with the assistance of Mr. H. B. Hodson, architect.

The buildings consisted of what was once a chapel, with a beautiful triple lancet-headed window of the early English style, and two ranges of dwelling apartments, in one of which was a large hall or refectory, with a handsome window at the end, and probably

> "Jolly friars tippled here
> Ere the abbey walls had tumbled."

This part, too large for use, was taken down, so as to isolate the chapel; the remainder of that range, which has a handsome old porch, was converted, by dint of some ingenuity, into a convenient dwelling-house, and the other range into stabling and domestic out-offices, leaving the end of the refectory, with its "ivy mantled" window, as a picturesque ruin. Care was taken to preserve as much of the old work as possible, and to assimilate the new with it.

Mr. Charles Stone, unfortunately, did not live long to enjoy it; and on his death, about three years ago, it was sold to a gentleman of the same name, who now resides in it.

The property is bounded on one side by the Thame, a small stream which separates Oxfordshire from Buckinghamshire, and gives its water and its name to the more celebrated river, into which it flows near Dorchester.

The antiquarian and archæological tourist may find an interest in visiting this place, and also the church of Thame, which is a handsome old massive cruciform structure, and contains several fine and curious monuments, particularly those of the Williams and Quatremaine families. This church has lately been fitted up with new pews and seats, and otherwise repaired and decorated, much to the credit of the vicar and the parishioners.

RESTORATION OF WESTMINSTER ABBEY

Sir,—Perceiving by your columns that *important alterations* are now in progress at Westminster Abbey, I venture to offer a few remarks on that building.

It has often been a matter of surprise to me, that while nearly all our fine old cathedrals have undergone, or are undergoing, a process of restoration, Westminster Abbey should still remain in such a deplorable state. However, I trust that under the auspices of the present eminent dean, we may hope for better things, and more particularly as such extensive improvements are in contemplation in the neighbourhood of the Abbey.

In a few years there will be the new street and the monument to Caxton in close proximity to the cathedral, and if Mr. Barry's grand scheme is carried into execution, we shall have a new bridge in place of the present incurable structure; one side of Bridge-street will be demolished to make way for the new Parliament Houses, as also the Law Courts (which are proposed to be re-erected in the neighbourhood of the inns of court), so that the restoration of Westminster Abbey is, as it were, imperatively demanded, in order to keep pace with the times.

Every one will doubtless admit that "what is worth doing at all is worth doing well," and every one who has seen the abbey must surely also admit that its restoration is required. What has been done of late years, I consider as worse than useless, and in order to do the thing properly it must be commenced afresh, and that, I contend, on a grand scale. And firstly, as to the monuments, the chief of them are, as you have often said, very inappropriately placed to the great detriment of the architectural appearance of the abbey, and should be remedied by the erection of a suitable building in the neighbourhood of or adjoining the abbey, for the reception of the greater portion of the monuments.

The stone columns, which are in a wretched crumbling state, should be replaced, and at the same time the iron bars at the springings of the arches might be removed. I would remodel the two existing towers, and complete the third, which was commenced by Sir Christopher; and the *whole pile of building* should undergo a process of restoration in the most substantial manner.

The objection to what is here proposed, would naturally be want of funds. To this I would reply,—if the matter is taken up vigorously and energetically, with the intention of fully carrying it out, there is not the slightest doubt but that the requisite funds

would be forthcoming. The Government of course ought to bear a portion of the expense, and if all our architectural, antiquarian, and archæological associations, metropolitan and provincial, will come forward nobly with their share of the expenses, not only as societies, but *individually*, and if the dean and chapter will open their purse-strings, there will soon be enough and to spare of the "wherewith."

As a worthy consummation to the restoration, I would admit the public free of charge.

AN OBSERVER.

THE GOVERNMENT SCHOOL OF DESIGN AT SHEFFIELD.

THE annual meeting for the distribution of prizes was held on Thursday week: Lord Morpeth in the chair. His lordship, who was received with great enthusiam, after congratulating the friends of the institution on the promising aspect of its affairs, presented in the report of the committee, from which it appeared that the number of regular pupils had increased from forty-six to ninety-one, proceeded to address himself to the more extensive and opulent manufacturers of Sheffield on the advantages of such an institution to art in all its forms.

"Let them rest assured," he said, "that even the very humblest of their workmen—the men comprised among the class which I am glad to find furnishes so many pupils to this institution—the anvil-makers, the cabinet-makers, the joiners and builders, the carvers and gilders, the chasers and etchers, the die-sinkers, the coach-makers, the engravers, the fork-makers, the gas fitters, the glass-painters, the masons, the modellers, the moulders, the painters and decorators, the saw-makers, the silversmiths, the surgical instrument makers, and the type-founders,—depend upon it the very humblest of these, when he shall be instructed in the knowledge of drawing, and in the perception of form, when he shall have acquired accuracy of outline, and correctness of taste and judgment, will be able, even in the minutest portions of his work, by some apt touch, by some ingenious finish, to give to the whole production grace and attractiveness which it could not otherwise have acquired. You would do well to guard yourselves against the notion that expensiveness is any necessary ingredient of excellence. Indeed, an excess of ornament often mars its own design, and a cumbrousness and superfluity of decoration often detract from that very beauty, which is best attained by simplicity of form and of outline, and more by abstinence than by a superabundance of decoration in its details. As an illustration of this, I might ask you merely to compare the outlines of such an artist as Flaxman, in his illustration of the Iliad—and those of you who are acquainted with classical literature will understand the allusion—compare the Briseis of Flaxman with the Angel of Bernini—the severe simplicity of the one with the frippery and foppery of the other. Now, comparisons of this sort should teach you to pay a proper reverence to the simplicity of real beauty. While we must congratulate both this town and the country at large upon the increase of this and similar institutions, and while we have reason to be pleased with the many symptoms multiplying around us of the increased attention which has been given to art, and the increased love of it which seems to prevail among the masses of our people, yet, we shall find, generally, that there is scarcely any advantage, or any subject of congratulation not accompanied by some counteracting risk. Human tastes and wills are still more devious than the planets, and have not always the same regularity of centrifugal and centripetal forces to keep them in their course; so that we shall perhaps find the multiplication of schools of design and art unions, and similar institutions, have some of this counteracting risk attendant upon them. We are happy to see an increasing love of art among the people; but it is not the design of such institutions to make all the lovers of art artists. That is not the scope and aim of such institutions. We admire the painting of portraits when in the hands of such a noble artist as Titian. We admire the painting of landscapes, when in the hands of such an artist as Claude. But we do not, on that account, wish all the pupils of schools of design to occupy their time in painting cauliflower-looking trees, or the chubby and unmeaning faces of all their relatives. Our object is to make skilful designers, and not to turn out so many finished ready-made Raphaels and Corregios. Though, at the same time, if these Raphaels and Corregios do exist, I think it no mean advantage that such institutions give them an opportunity of developing their hidden faculties, and to expand them into genial light of public recognition and patronage."

The Earl of Arundel and Surrey followed his noble relative as the mover of the first of a series of business and other resolutions, and expressed his great interest in the improvement of the variety and beauty of the designs appropriate to the arts peculiar to Sheffield, and in the establishment of a kindly feeling between the designers and artizans and their masters. Mr. Heywood, M.P., in seconding the same resolution, regarded the scholars of such schools as the very *élite* of the working classes, and those most likely to distinguish themselves in their situation, and become masters themselves, and he suggested the establishment of a national exhibition of art in the metropolis, in which the Sheffield scholars and those of Manchester, Birmingham, and other important towns, might be allowed to exhibit their beautiful specimens of art. Mr. J. Abel Smith, M.P., in moving another resolution, and alluding to the superiority of England in her various productions, as one of intrinsic utility and excellence rather than of beauty either of form or colour, remarked that,—"It is no doubt equally true, with regard to beauty of colour, that it has been a question whether other countries have not enjoyed peculiar advantages; but with regard to beauty of form, I have never believed, and I do not now believe, that we are not in this country able to compete with any other country in the world, if our artisans are properly instructed, and their attention be devoted in a proper way to the end to be attained."

Mr. R. Solly, after regretting that the female class had not yet been a successful one, intimated that—"In the Glasgow Institution there were 111 pupils in the drawing class. He had been in Paris, and found that there were 1,800 pupils in the School of Design studying various arts. In Antwerp, a town smaller than Sheffield, there was an Academy of Arts containing upwards of 600 pupils; but every institution must have a beginning."

Colonel Thompson, M.P., then addressed the assembly. "One object," said he, "ought to be the ornament and the improvement of the world in which we are placed; and nations in general have an increasing spirit of anxiety and brotherhood, leading them to persevere in a friendly contest, by which we shall all, in the end, be benefitted. * * * Depend upon it, the forms which nature has given to us are more beautiful than any imagination can invent. The error of the dark ages, I believe, has generally been, that they desired to increase beauty by the invention of monstrous combinations of what there were no examples set before their eyes. On the other hand, if we see what has been the progress of those civilized nations of antiquity which excelled on the earth, we shall see that, as they inflexibly adhered to the copy and improvement of the object set before them, in respect to the "human form divine," they caught their inspiration. It is true the ancient artists flourished in "sunny climes," where they were freed from many incumbrances which affect modern artists; and the consequence is, that wherever we look for the perfection of the human form in sculpture, it is to the ancient masters we refer. It has been observed by Sir Martin Arthur Shee, president of the Royal Academy, that in those forms which are not derived from the immediate copying of any natural object, in the forms of their vases and instruments, both useful and ornamental, the ancients adhered to the form of the ellipse, but it may be I am referring to the alphabet of some of those who hear me."

Mr. James Montgomery said:—"There is one name which has not yet been pronounced in this room, but I will mention it—Chantrey. I remember him when a poor boy, as poor as any pupil now present; yet he rose to the highest eminence in his class of art. The motto of your institution ought to be, "Francis Chantrey." Through greater difficulties than those experienced by any now present, Chantrey pushed his way, and rose to eminence. His earliest instruction in the art of drawing was received from an itinerant player, of the name of Halpin, who visited Sheffield; and his first lessons in modelling were from a humble artist of the name of Taylor, who executed the two small figures on each side of the door of our General Infirmary. With such humble instructors, and with the help of Providence, he availed himself of the opportunity of improving himself by going to London, where he certainly rose, by his own exertions, to the head of his profession. On the occasion, I have been told, of an exhibition at the Royal Academy of the model of the two children, sculptured for the Lichfield Cathedral, this specimen of sculpture attracted the attention of every mother and every mother's son who visited the place. While the splendid monuments of the classical performance of his contemporary were passed over by learned and critical judges, yet every one who could feel and knew what nature was, hung in silence over Chantrey's, Colonel Thompson has made a remark respecting nature as the best model to copy. What was it that made Chantrey and other great sculptors? It was following nature, and making the 'human face divine' to appear as it really is, from the hand of its Maker."

In returning thanks for the last resolution, the noble chairman, in conclusion, said, "I assure you it has been a source of great gratification to me at being able to take part in these proceedings. I am not sure, however, that I do not expose myself to the charge of presumption in so doing, because I well know, that though I have a sincere and cordial appreciation for art, yet I hold myself as very little competent to give any opinion on matters of art, inasmuch as I should find it difficult to form a straight line, and if I should attempt to delineate a circle it would be more round-about than round. I should have been very glad if competitors from a female class had presented themselves to receive those prizes to which they would have been entitled. I think in this way we should better come up to that description of a public building given us by one of the most refined and distinguished poets, who says:—

> 'Firm Doric pillars should support the base;
> The light Ionic crowns the upper space;
> Thus all below is strength,
> And all above is grace."

I shall be happy if the future history of the Sheffield School of Design enables us to graft on the more solid foundation below the ornaments it would derive from its female pupils above."

RAILWAY JOTTINGS.

A STEAM whistle, with a gamut or scale of shrieks, on which a code of signals is proposed to be founded, has been invented by a Mr. Doull. A concert of steam-whistles, says a contemporary, would be a rather startling novelty of the rail for the ensuing season.——The number of passengers who travelled by first-class, on sixty-three British lines, in 1845-6, according to a parliamentary return, was 6,160,354; by second class, 16,931,065; by third class, 14,559,515; by parliamentary class, 3,946,922; by mixed, 2,193,126: total, 43,790,983. The amount of receipts from passengers was:—first class, 1,661,897*l.* 19s. 10½d.; second class, 1,937,946*l.* 19s. 11d.; third class, 738,474*l.* 4s. 11d.; parliamentary class, 293,732*l.* 7s; mixed, 93,164*l.*: total, 4,725,215*l.* 11s. 8½d. The amount received for goods, cattle, &c., was 2,741,200*l.* 16s. 6½d. Grand total, 7,466,416*l.* 8s. 0½d. It thus clearly appears, that the inferior class carriages, compared with the first class, are really the superior, in amount of returns, by nearly double the sum yielded by the first class; and that the second class, of itself alone, here exceeds the first by nearly 300,000*l.* Surely, then, the inferior class passengers are entitled to a little more respect and accommodation than the following circumstance, not by any means a singular one, proves them to receive at the hands of those into whose pockets they thus actually transfer millions of sterling money out of their own hard-earned gains. A poor man complains, in the *Times*, that merely because it appears, that the Act anent parliamentary trains does not compel it, the accommodation and respect represented by the munificent ad-

junct of a penny, or even a halfpenny, candle, during the transit of trains at night, was denied to a carriage in which he was a passenger, amongst upwards of forty other persons of both sexes, paying, in all, at least 16*l.* 3*s.* 4*d.* to the Company (the South-Eastern), who, he was coolly assured, while complaining of the inconvenience, disrespect, and moral impropriety, of the thing, nevertheless really 'could not afford it!' He, at the same time, but quite as ineffectually, urged the risk, which all run, of being roasted alive by the firing of the combustible female dresses from the flicker of an unprotected candle, provided by one of the passengers,—richer or more generous than the *company* collected together under the auspices of the *other* 'Parliamentary Act,'—for behoof of all, and placed upon the floor for want of a more proper or safe receptacle. If the object of railway companies be to disgust the poorer classes, and prevent them from presumptuously riding by rail at all, by such a disregard of the comfort, the safety, the life, or even the common decencies of the humbler classes, we could help them to a much more effectual scheme than that—a scheme which was once most effectually adopted in the evacuation of certain 'classes' by a chemical professor in the modern Athens, we remember, on occasions when the occupants were induced to remain in the voluptuous enjoyment of cheap but fascinating odours elicited in the course of the professor's experiments in organic chemistry,—and which, by the way, we would recommend as attractives towards first-class carriages, whilst the professor's succedaneum—sulphuretted hydrogen—would be found in practice a much more expeditious evacuant of the classes of inferior or less desirable grades than the mere negative, darkness, and *against* which, we will venture to say, the 'Act' no more specially provides than against the darkness itself.——The 'Oxford, Worcester, and Wolverhampton' bridge across the Stour, at Stourbridge,—*the* Stour *bridge* of the new order of things, in short,—is about to be commenced, and will be one of the 'stupendous' structures of the railway era, as the line is to be carried across the valley at an elevation of ninety feet: the embankment and bridge will be nearly a quarter of a mile in length.——The architect of the South-Western has been instructed to design a 'superb refreshment-room' at Southampton, and other alterations, the cost of which will be 5,000*l.*——The completion of the permanent way of forty miles of the Caledonian line from Carlisle to Beattock, was lately announced, "and it was believed, on the part of both engineers and contractors, that every difficulty had been overcome, and that the line would be ready for public use in a day or two, without let or hindrance. The embankment at Mossband, however [whose 'foundation is a spongy and unsettled morass'], played them false; for, ere noon, it slipped, or sank down, to the extent of some six or seven feet. About a hundred men were immediately set to work to repair it, and before the evening they had restored one set of rails; but, in spite of every exertion, as new material was brought upon it, it gave way in the evening, and it was only by a succession of relays during the whole night that it was rendered passable for the engine which was expected to bear the inspector over it on Wednesday. Under these circumstances, it was considered advisable to delay the formal inspection till Saturday, when it is expected the embankment, which has hitherto proved so treacherous, will have fairly settled down."—This untoward intelligence, following directly on the heels of an almost equally recent detail of the enormous quantities of *heavy materials* thrown into the gulph, just affords a reiterated justification of what has been so repeatedly noted in THE BUILDER, though still declared to be 'an accident which no human foresight can prevent.' Sufficient experience surely has been acquired at Chat Moss, Stowmarket, and elsewhere, to be now turned to some better account by men of ability and ingenuity, than to the mere denunciation of the weakness or insufficiency of 'human foresight.' Notwithstanding these evidences of possible future risk unless the restoration has been carried out efficiently on the principle already so well established elsewhere, we observe a subsequent announcement of the opening for public traffic on the 10th instant throughout, from Carlisle to Beattock, and of course across this same embankment, which, as a portion of the forty miles, was declared by the engineers, *previous* to its subsidence, to be 'now completely in thoroughly good condition.' Surely a little more time should be allowed for contingencies such as those that have already occurred. The opening of the remainder of the main line from Beattock to the junction with the Wishaw and Coltness Railway depends only on the finishing of 20,000, out of the 430,000 cubic yards of summit cuttings, which, though all rock, will be accomplished, it is calculated, in about two months. Most of the mason works are completed, or nearly so.——The bridges on the Cumnock branch of the Ayrshire line, at Kilmarnock and Irvine (one of twenty-four and the other of seven arches), contracted for by Messrs. King and Sands, are in an advanced state.——MM. Fournel and Fisher, engineers of the Northern (continental) Railway, have been condemned by the Correctional Police, to pay each 1,000fr. fine for each of two contraventions of the law committed in allowing three new locomotives to be run on the line, without having been previously examined and tested, and two others to be used without being furnished with steam-gauges. The Company were also condemned to a conjoint responsibility for the fines.——Our Metropolitan Telegraph Company have announced the opening, during the ensuing three months, of the commercial and general system of telegraphic communication between their central station in Lothbury, now rapidly approaching completion, and fifty of the principal towns in England, a list of which, pretty much the same, we think, with that already given in THE BUILDER, the Company have now published by advertisement. On Saturday last the conducting pipes opening the communication with all places south of the metropolis were being laid in King William-street and Princes-street.

THE USE OF LEAD PIPES AND CISTERNS.

SIR,—But for your able and proper reply to "Vox" (p. 412, *ante*), his letter might have had an injurious effect, by blinding the public against important facts, or, at least, in preventing public attention being directed to the subject in question, which has been found absolutely necessary in many parts of England.

Should "Vox" be in doubt as to the corrosion of lead, and the solubility of corrosive matter formed by free carbonic acid, atmospheric oxygen, &c., I shall be happy to give ample proof.

It is an erroneous opinion that lead has been used for centuries without causing any deleterious impregnation of water. I would ask, if necessary investigations have been made in all parts of the country? and, if the origin of every disease has been discovered? How many have fallen an early sacrifice after a long and painful illness, without the cause having been known?

There is less danger in drinking water when kept in leaden tanks, than when it has passed through pipes, because the gases which usually form the most soluble corrosive matter are confined within the pipe, whereas, in open cisterns, the gas is more liable to escape. I have found carbonic acid in water which corroded lead rapidly, when corked up in a bottle or confined in a pipe (the pipe leading from the pump to the well is of course always full of water), but when a slip of lead is introduced into a glass of the same water, the metal is scarcely acted upon, owing to the gas escaping. When hydrochloric acid * is contained in water, which I have lately discovered in several localities, the lead is acted upon with great energy in open vessels, and the water is strongly impregnated with the chloride of lead.

Six years' daily experience enables me to speak with confidence on the subject; but I by no means wish to cause any unnecessary alarm; there are, however, many persons besides myself who have found that precaution is absolutely necessary for the preservation of health.

I examined some water a few months since, which contained lead in solution, and the pipe had been laid down about fifteen years; but notwithstanding that the solid contents contained in a pint of the water amounted to ten grains, and were composed of chlorides and sulphates, *they afforded no protection by forming an insoluble crust*, otherwise the lead would not have been found in solution.

It is generally believed that Roman cement will not adhere to lead; but I am informed by a gentleman that he had a leaden tank covered with a thin coating of good cement about three years since, which is perfect to this day. If this simple plan were to be generally adopted, no risk, as regards the tanks, would be incurred: an occasional inspection, in order to see that the cement had not chipped off, is all that would be required.—I am, Sir, &c.,

HY. OSBORN.

Southampton, Sept. 3rd, 1847.

* The mode of detecting the presence of this acid in water, I published in the *Pharmaceutical Times*, last May.

NOTES IN THE PROVINCES.

A 'GAS, Water, and Sewerage,' Committee has been appointed at Hadleigh, for the supply of the town 'under one system of management.'——Lakenham church has been re-opened after a thorough cleansing, painting, and repair.——From the accounts of the Southampton Commissioners for paving, lighting, and improving the town, it appears that during the past year a sum of 10,280*l.* odd has been expended on the extension, and repair, &c., of sewers; 918*l.* odd also, including 190*l.* of salaries, have been expended on the maintenance and cleansing of the streets, roads, and highways, and in lighting, &c., 523*l.* odd.——The church of Kingston Deverill, Wilts, recently rebuilt in the early decorated style of end of 13th century, by the Longleat family, from designs by Messrs. G. P. Manners and Gill, of Bath, Architects, was consecrated on Tuesday week.——The restoration of Othery church, near Bridgewater, is so far completed, that it is intended shortly to re-open it. Much further repairs are still required did the funds permit.——St. Peter's church, Cheltenham, the erection of which, for the accommodation of the populous districts of the Tewkesbury-road, has been so long talked of, has been at length commenced. The first stone was to be laid on Monday week by Sir W. Jones.——St. Mark's Church, Tewkesbury-road, erected, from designs by Mr. F. Niblett, architect, since 26th March last, when the foundation-stone was laid, was consecrated on Tuesday week. It is a plain and simple edifice, in the early English style, with a nave 67 feet by 18 feet; two aisles, 56 feet by 12 feet each; and a chancel, 24 feet by 16 feet; a high-pitched open roof and tall lancet-shaped windows, the east one filled with painted glass. A tower 112 feet high springs from the south-west corner of the nave. The seats are open and free.——Something like an honourable recognition of the services of a professional man was made the other day at Cheltenham, where a new road was inaugurated by a 'master of the ceremonies' with a 'libation of wine,' under the name of the surveyor, Mr. C. Hale, who had formed it.——The new town hall at Dudley is so far completed that the petty sessions were to be held in it on Monday last.——The new Church at Cookley, near Kidderminster, is to be erected, it is said, from the designs of Mr. Perkins, architect, of Worcester. The edifice is intended to be in the decorated style of architecture, and to accommodate 400 persons, without galleries.

THE BRONZE STATUE OF SIR EDWARD BARNES, late Lieutenant-General, and Governor of Ceylon, was inaugurated at Colombo on 25th June last. From an article in the *Colombo Examiner* on the subject of road-making in Ceylon, it may be inferred that his efforts to form good roads have been of great service, and are worthy of being imitated by his successors. He is said to have thus laid the foundation of the prosperity of Ceylon, and to have changed the island from a military garrison to a large exporting and importing colony.

ANCIENT CARTHAGE.—The *Journal des Débats* announces the discovery, at Tunis, on the 14th ult., of an object most interesting to all artists and antiquaries. Some workmen employed to quarry stone near the inner harbour of ancient Carthage, discovered, about 30 feet underground, a colossal bust, in marble, representing a figure of Juno, so wonderfully well preserved as to have the appearance of having been sculptured only the day previous.

THE UNION OF LABOUR WITH BEAUTY.

At a *soirée* in Sheffield last week, on the occasion of laying the first stone of the Athenæum and Mechanics' Institution there, of which we have already spoken, Lord Morpeth made an eloquent address, as indeed he always does. In the course of it, speaking of poetry and fiction, and with apt reference to the place in which he was, his lordship said:—Those of you who have the opportunity of consulting the old legends and classical mythology are aware, that among the fancied deities with which they people their world, one more especially was regarded as the god of labour and of handicraft, Vulcan by name, who was always represented as employed in huge smithies and workshops, hammering huge anvils, blowing huge bellows, heating vast furnaces, and begrimed with soot and dirt. Well, ladies and gentlemen, for this hard-working and swarthy-looking divinity they wished to pick out a wife. And they did not select for him a drab—not a person, taken herself from the scullery or kitchen, but they chose for him Venus, the goddess of love and beauty. Now pick out for me the moral of this tale, for I believe that nothing ever was invented,—certainly nothing by the polished and brilliant imagination of the Grecian intellect—which has not its meaning and its moral. I have no doubt that all the legends of our own country—that the one even of your own neighbourhood, the Dragon of Wantley itself,—has some appropriate allegory and meaning, if we only knew how to find them out. But what is the special meaning of the marriage of Vulcan with Venus—of the hard-working artificer with the laughter-loving queen—of labour with beauty? What is it but this, that even in a busy hive of industry and toil like this, even here, upon a spot which is in many respects no inapt representation of the fabled workshop of Vulcan — even here, amid the clang of anvils, the roar of bellows, and the sputtering of forges—even here, amid stunning sounds and sooty blackness, the mind—untrammelled mind—may go forth—may pierce the dun atmosphere which is poised around us, may wing its way to fresh air and purer light which are beyond, and may ally itself with all that is most fair, genial, and lovely in creation. So, gentlemen, I say, your labour—your downright hard, swarthy labour may make itself the companion, the helpmate, and the husband of beauty—of physical beauty, as I have reason to believe, from the inspection which I am able even now to command. But the beauty with which I say your labour should ally itself, is intellectual beauty—the beauty which is connected with the play of fancy, with the achievements of art, and with the creation of genius,—beauty, such as painting fixes upon the glowing canvas, such as the sculptor embodies in the breathing marble, such as architecture develops in her stately and harmonious proportions, such as music clothes with the enchantments of sound. Now, it is the perception and cultivation of the beautiful in these departments that I look for in your schools of design, and your concerts; and many of the lectures which you hear from able and gifted men, may be made most agreeably subservient; and I strongly advise you, and I advise the members of this Mechanics' Institution, and I strongly advise its well-wishers and promoters, to show a discriminating and generous support of these tasteful and humanising pursuits.

Furnace Improvements.—A patent has been granted to Mr. George Grundy, of Manchester, for a peculiar arrangement of furnace and flues, so as to form a continuous fireplace from end to end supplied with air from parallel air flues, thus allowing the heat to be conducted from end to end, or from end to centre repeatedly, and for a peculiar form and construction of tile or fire-clay tubes, cylinders, or retorts for generating gas, to be made in pieces strengthened with imbedded metal hoops, jointed with fire-clay, and made to extend to any length, or from end to end of the furnace, with exit-pipe at both ends for the issue of gas, and the means of removing coal tar from it, and creating a draft through it so as completely to remove the carbonaceous deposit. Four of these retorts may be mounted in one furnace.

Correspondence.

CARDIFF TOWN HALL COMPETITION.

Sir,—In the last number of The Builder my name is mentioned in connection with this competition, in a manner which, I think, calls for some notice on my part. Amongst other observations, you state that, "having limited the competitors to the sum of 8,000*l.*, the council have awarded the first premium to me, my estimate being 11,690*l.*"

The advertisement for designs, after stating the accommodation required, ended thus,—"The means at the disposal of the committee are calculated at 8,000*l.*," and I do not conceive that there is any thing here which renders it imperative on an architect to limit his estimate to that precise sum if, in his opinion, the accommodation indispensably required could not be provided for the money. The question is, has *any building* containing a town-hall, two courts of justice (of size adequate to the population of Glamorganshire), together with police court, rooms for magistrates, grand jury, clerk of the peace, court-keeper, &c. &c.,—ever been executed for 8,000*l.*, or anything like it, even where building materials are as cheap as at Cardiff?

My design was conceived on as economical a scale as I deemed admissible, and I reported that which I believed a fair and honest estimate, and at which sum I should have no objection to guarantee the execution of the work. Your journal teems with letters and remarks on the,—to use the mildest term,—error of reporting false or inadequate estimates, and I certainly did not expect to see in The Builder, which has always striven to rectify this abuse, hasty strictures on the acceptation of an apparently honest estimate. In this very same number, is an instance in point, where it is stated that the lowest tender for the Guernsey memorial was double the amount of the estimate; such an occurrence I have made it a rule to avoid to the best of my ability, and in my report accompanying the design, I candidly stated, though at the risk of losing all chance of success, that I did not think the required accommodation could be procured for 8,000*l.*: and in all probability the council may have come to the same conclusion, from the result of former experience as to the adequacy of estimates generally.

Trusting I shall be excused this vindication of myself from being the object of what your correspondent is pleased to term "a decision the most unjust," and apologizing for taking up so much of your valuable space,

I am, Sir, &c., Horace Jones.

16, Furnival's-Inn, September 6th, 1847.

*** The remarks in question contained no charge against Mr. Jones even by implication. The objection was to the proceeding of the committee, and that remains still in full force. The second premium was awarded to Mr. Christopher Eales.

GUERNSEY MEMORIAL COMPETITION.

Sir,—Your correspondent's statement relative to the Victoria Tower, Guernsey, is erroneous; permit me, therefore, to set him right, and to offer a few statements of my own by way of explanation.

1st. The lowest tender was 2,664*l.* 18*s.* 6*d.*, and not "*just* 3,000*l.*"

2nd. This tender was made upon drawings showing a tower of greater height than was absolutely required by the conditions of the competition.

3rd. The building will be erected for the 1,500*l.* without any deviation from the sketch selected by the committee from three or four I sent to them as a competitor.

4th. Previous to the builders' competition, I prepared the committee for an excess over the 1,500*l.*, and they have explained to me that the greatness of such excess arises from the fact that the extensive government works progressing in the neighbouring island of Jersey have tended to advance the price of both labour and materials to a very considerable extent. It is a fact, moreover, that there were only three tenders delivered.

I am, Sir, &c.,

William B. Colling.

London, Sept. 8, 1847.

Miscellanea.

Lectures on Architecture.—At the Collegiate Institution, Liverpool, Mr. T. L. Donaldson has delivered a course of lectures on architecture. The second, given on Friday in the week before last, related to the architecture of the Greeks. The lecturer said:—The highest styles of ancient architecture were shewn to have their origin in the simplest and most primitive structures. The original type of the Grecian temple was the wooden hut. (?) Architecture, in fact, comprised a complete system of relations, proportions, and laws, which had their basis in nature itself. The Doric order was a thoroughly well-conceived and highly-wrought production of the Greeks, unimproved by any subsequent efforts. It was happily and successfully carried out in some of the public buildings of Liverpool, as the chapel of the School for the Blind, and the oratory at St. James's Cemetery. The Ionic order was next described. Generally, the distinctive feature of an order was the capital, but of the Ionic order an essential part was the base. The shaft contained twenty-four channelings, and the flutes, instead of coming to a sharp edge, had a fillet between each two. The capital was marked by spiral volutes. The Doric order was invented in Greece proper; the Ionic in Asia Minor. The Corinthian order differed essentially from the others in its capital. The base was much the same. The story of its origin was interesting. Whatever dependence was to be placed upon the fact, the moral of the story was good. It shewed that if an artist wished to find any thing new, he must go to nature, and he would be sure to produce something graceful and elegant. It was not merely one part of a building that constituted character: the type must be followed out in the smallest details, otherwise there would be a harshness and irregularity for which no amount of beauty in the individual parts could make amends. In treating of Grecian temples, and particularly of the Parthenon, which was cited as a proof of what the Greek mind could do in true art, the lecturer observed, that when architecture was alone she was defective. She required the aid of painting and sculpture, and did not acquire her true majesty till all these were concentrated in one great building. Here it was that we fell short. We did not adequately embellish our buildings, consequently, they were inexpressive and passionless: they did not elevate the mind or move the imagination. In the new Houses of Parliament, however, we were likely to have a structure that would vie with the finest productions of ancient times.

The Rescue of the Great Britain transatlantic leviathan steamer is regarded as one of the greatest triumphs on record of the engineering talent applied to the raising of a stranded ship, not even excepting the floating of the *Gorgon* steam frigate at Monte Video. Although the engineer who first undertook the task was Mr. I. Brunel, jun., who caused a peculiar breakwater to be erected seaward, to which Captain Claxton added an outward row of elastic greenwood;—by the Messrs. Bremner, father and son, of the north of Scotland, was the task of rescuing her chiefly accomplished. "Mr. Bremner," says the *Liverpool Times*, "has been singularly successful in all his undertakings of a similar kind. He has now raised no less than 200 submerged vessels. Some time ago he succeeded in saving a cargo of Swedish iron belonging to Messrs. Jevons and Sons, of Liverpool, from on board a vessel sunk in deep water on the coast of Scotland." Several other gentlemen are entitled to participate in the credit of the achievement.

Irish Marble.—We find, says the *Morning Post*, that a vessel, just arrived in the river from the port of Galway, has brought the large quantity of 32½ tons weight of marble, the production of the county of Galway. This is the same quarter from which the arrivals of last year took place, and which was at the time spoken of as being of a very beautiful description.

Demand for Labour in Australia.—The rate of wages paid in April last, was—Blacksmiths, 30*s.* to 35*s.* weekly; carpenters, 6*s.* to 6*s.* 6*d.* per day; bricklayers, 6*s.* to 6*s.* 6*d.* per day; masons, 6*s.* to 7*s.* per day; labourers, 15*s.* to 25*s.* per week. Most of the trades, it is said, can find good employment at the prices fixed.

THE CHURCHES OF LONDON.—Passing down King-street, we face the interesting church of St. Margaret's, Westminster, standing beneath the shadow of the magnificent abbey. I think it is Smollett who indignantly observes, that England is the only country in the world where a stranger is not made welcome to the house of God. The neglected and disgraceful state of many of the London churches; the exaction of *twopence* as the price of entering the great cathedral of St. Paul's; the necessity of feeing a pew-opener on a Sunday, and, on a weekday, of sending to an ale-house or an eating-house, for the attendance of a sleepy or drunken sexton with his keys, is indecent and discreditable in the extreme. Putting the higher consideration of religion entirely out of the question; putting aside the miserable disfigurement of our many beautiful churches by pews and galleries, and the invidious aristocratic and unchristian-like distinction which is now made between the rich and the poor,—the public have at least a right to exact from the English clergy the same boon which is granted in every Christian city in Europe—namely, a free admission to the church which they support out of their daily means. London is rich with numerous churches, replete with interesting monuments, historical associations, and architectural beauty; but whether we seek ingress to them from purely devotional feelings—whether with the feelings of an artist, a poet, or a devotee they alike engender emotions which advance us in the dignity of thinking beings, and consequntly ought to be freely opened to the public. We are yearly throwing open the doors of palaces and museums to the lower orders, free of expense, and yet the doors of the house of God are still closed against them. As an Englishman and a Protestant, I could not accompany a foreigner or a Roman Catholic to any one of the interesting churches of London without a blush!—*Jesse's Memorials of London.*

CHURCH STRUCK BY LIGHTNING.—The parish church of Welton, Lincolnshire, was struck by lightning on the Sunday before last, when one person was killed and many others injured. It appears that the lightning first struck the south-eastern pinnacle of the tower and threw down a portion of the battlement. It then passed into the tower, and melted an iron rod connected with the clock. Here the current of electricity was divided, one portion having descended on the exterior, and entered the earth, while another portion descended inside, and having perforated the stone-work of the door into the interior of the church, and thrown down the clock dial inside, passed along the north aisle. In this part of the church were suspended three small brass chandeliers, which served as conductors for the electric fluid downwards, as all the persons standing underneath them were injured. On the floor of the pew being inspected, it was found to be perforated with thirty or forty small holes. In passing from the north aisle into the chancel, it went out by five different holes in the east window, and perforated the stone wall, upwards of two and a half feet in thickness, in two different places.

VALUATION OF PROPERTY IN MIDDLESEX.—At a meeting of Middlesex magistrates on Tuesday, a report was received from a committee appointed two years ago to collect evidence as to the increased value of property within the county, and to revalue the same. The report stated that the committee, after examining witnesses from upwards of 100 parishes, declared the present annual value of the landed and tenement property of the county to be 7,754,330*l.* The rental, according to the old valuation, amounted to 6,367,317*l.*, thus shewing an increase on the new valuation of 1,387,013*l.* The assessment of late years had amounted on the average to 3½d. in the pound; but the ensuing assessments when collected (presuming them to be made upon the new valuation) would probably not exceed 2½d. in the pound.

THE LAKES.—Mr. Wyld has published a map of the Lake District, which will be found useful by all who intend visiting this beautiful portion of England, embracing Lancashire, Cumberland, and Westmoreland.

PREVENTION OF INTRA-MURAL BURIAL.—A meeting will be held next Wednesday evening, at the Crown and Anchor Tavern, to petition Parliament on this subject. Mr. B. Bond Cabbell, M.P., will take the chair

PROJECTED WORKS, &c.—Tenders have been called for by advertisement for the whole or portions of the works to be done in taking down and rebuilding the north aisle of Stowe Church, Lichfield; building the new district church at Walker, mason and joiner work, &c. to one person; erecting a new Grammar School at Kidderminster; painting the Cambridge Corn Exchange; taking up and relaying with new 4-inch granite paving, the carriage way, pavement, and other work in part of Duke-street and Tooley-street; repairing the foot and carriage pavements and lighting with gas at Saffron-hill; making sewers, 550 feet and 2,267 feet for Westminster Commission; supplying 2,000 feet of Aberdeen or Guernsey granite curb, 12 by 8, dressed, &c., at Woolwich; executing the works on Cameron's Coalbrook Railway; lighting with 15 gas lamps part of the parish of Edmonton; and supplying 5,700 tons of wrought-iron rails, 2,200 tons cast-iron chairs, and 75,000 larch sleepers to the Shropshire Union Railways and Canal Company.

ANTIQUITIES.—In pulling down the deanery at Lincoln, two very ancient open fire-places and chimneys have been discovered, which are conjectured to be part of the original building of Dean Gravesend in 1254. Both are of wrought stone, with tiled backs, and have been made for the burning of wood upon the hearth; and each chimney forms the half of a four-sided pyramid, with the apex ending in the ceiling of the rooms.

TO CORRESPONDENTS.

"*J. F.*" (Manchester).—On referring to the communication in question, it does not appear to us that "B. B." arrogates to himself any merit. The trap is claimed by several. We will take an opportunity to give that part of the letter which relates to our correspondent's own proceedings.

"*J. H.*"—The instrument, of which a sketch was inclosed, is for the purpose of guiding the pen in ruling in curves.

"*S. C. W.*"—The width of the shadow would be the same as the extent of the projection.

"*J. A. P.*" next week.

"*J. H. C.*"—We are not acquainted with the gentleman in question.

Received.—"E. J. C." "J. L." "A. B." (Brick Duties), "C. R. C." "R." "Ex-M. P." "W. H. T." "Yindex," "J. W." (Great Malvern), "C. J." "F. and G." "J. S." "Ground Plan of the Actual State of the Temple of Minerva, at Athens," by George Knowles: Bell, Fleet-street. "Observations on Limes, Calcareous Cements, Mortars, &c." by Major-Gen. Sir W. Pasley; Second Edit., Part I.: Weale. "Chart of Ancient Armour, from the Eleventh to the Seventeenth Century," by J. Hewitt: Bell, Fleet-street.

"*Books, Prices, and Addresses.*"—We have not time to point out books or find addresses.

ERRATUM.—"To obtain heights which cannot be measured."—An error accidentally crept into the paragraph thus headed (p. 403, *ante*), which requires to be corrected. Instead of—"as the distance between the rods is to the height of the long rod over the short one, so is the distance of the *long* rod from the building to the height of the building,"—read, "so is the distance of the *short* rod," &c.

ADVERTISEMENTS

DRUCE'S, No. 2 WHARF, late Paradise-wharf, Chelsea.

TO THE TRADE.—Parties desirous of delivering Timber Deals, Stone, Bricks, or any other goods, in the districts of Chelsea, Brompton, Fulham, Kensington, &c. &c., will find great facilities of Wharfage, Cranage, or Delivery, by applying as above. A weigh-bridge and drawdock.—N.B. Depôt for Glass Pantiles.

JAS. COVINGTON and SON, Licensed Lightermen, No. 8 Wharf, City Road Basin, and No. 1, Warkworth-terrace, Limehouse, London. CONTRACTS TAKEN FOR LIGHTERAGE of every description of goods to any extent.
N.B. Heavy castings, &c., craned under Twenty Tons. Goods landed and carted.

WILLIAM PETERS (late Poynder and Medlicott),
LIME WHARFS,
Great Scotland Yard, Charing Cross; and Paddington Basin.

TO BUILDERS, CONTRACTORS, &c.
GREY STONE LIME of the best quality will be delivered alongside any wharf in London at 7s. per yard of thirteen baskets.—Parties can be accommodated with a moiety of a freight.—Apply to CHARLES FORMBY, Esq., Halling, near Rochester.

FIRE BRICKS.—WARD & HART, Honduras Wharf, Bankside, Manufacturers and Exporters of every sort of Fire Bricks, Lumps, Tiles, Clay, &c. Builders, Gas Companies, Engineers, Shippers, and all large buyers, supplied from ships from the Manufactories direct, at the lowest prices. A large Stock of every quality always on hand at the Wharf as above. Goods made to pattern at a short notice. Patent Corn Drying Malting Tiles. Lime, Sand, Gravel, Bricks, and Tiles, of every description.

By Her Majesty's Royal Letters Patent.

GLASS VENTILATORS FOR WINDOWS.

BAILLIE'S Patent Transparent Slide Valve VENTILATORS.—To be had of EDWARD BAILLIE, Glass Painter and Stainer, 12 B, Cumberland Market, Regent's-park, London. Their extensive and successful application to Public Offices, Bed-rooms, and the cure of Smoky Chimneys, prove their great utility. Forty per cent. from the original Tariff.

DR. ARNOTT'S CHIMNEY VENTILATOR.—F. EDWARDS, Stove Maker to her Majesty, 20, Poland-street, Oxford-street, begs to call the attention of Architects, Builders, Gas-fitters, and the Public to the truly invaluable advantages to be derived from the use of Dr. Arnott's Valve for the Ventilation of rooms of every description.—Prices from 7s. 6d. to 20s. each. A prospectus, containing full particulars, to be had on application.
SMOKY CHIMNEYS—NO CURE, NO PAY.
Twenty-five years' extensive experience in all the branches of a stove manufacturing business, and the cure of smoky chimneys of every description, fully justifies F. E. in stating that he can undertake the cure of smoky chimneys on the equitable terms of no cure no pay.

ZINC WORK.
MESSRS. F. and J. HARLAND beg to call the attention of Builders and others, to the following list of prices, for cash:—

2-inch Pipe	per foot 4½d.	2½ inch Gutter	per foot 4½d.
3 ditto	5d.	4-inch ditto	5d.

Including fixing.
Flats Covered and Cisterns Lined from 4½d. to 8d. per foot superficial; Cornice Gutters, 5d. to 7d.—No. 3, Cumberland-place, Newington, Surrey, opposite to the Fishmongers' Almshouses.
N.B. Orders by Post punctually attended to.

WALLIS'S PATENT LIQUID WOOD KNOTTING.—This newly-discovered Liquid Composition, which Messrs. Geo. and Thos. Wallis have the satisfaction of introducing to the Trade, possesses the important qualification of effectually stopping Knots in Wood, however bad, and preventing them eating through and disfiguring the paint above.
Many substances have been used and much time spent in endeavouring to find a cure for a bad Knot, but hitherto without success. Messrs. Wallis therefore feel much pleasure in offering to the public an article so long and anxiously called for.
In the application, skill is not required; it is put on to the work with a brush like common paint, can be used in all climates and situations, and does not require heat.
Sold wholesale and retail, by Messrs. G. and T. Wallis, Varnish, Japan, and Colour Manufacturers, No. 64, Long Acre.

TODD'S PATENT PROTOXIDE PAINT manufactured by CHAS. FRANCIS and SONS, CEMENT WORKS, NINE ELMS, LONDON.
The properties of this Paint are peculiar for preventing iron from oxidation, wood from decay, and masonry from damp; it neither cracks nor blisters with the hottest sun, and is therefore most valuable for Railways, Boilers, Steam, Gas, and Water-pipes; Hot-houses, Forcing-houses, and for Shipping. Its adhesion is so great to iron and wood, that the hardest friction will scarcely remove it. It prevents vegetation on stuccoed buildings, and is not affected by spray of sea-water.
PROTOXIDE PAINT is sold ground in oil, and, compared with white-lead, its property of concealing is as 75 to 88, so that one hundred weight is equal to one and a half of lead. It works well under the brush, and forms with oil an unctuous and cohesive mixture. If blended with other paints it has a softer tone than white-lead. For houses painted during occupation, it is most preferable, being perfectly innoxious.

TO ARCHITECTS, BUILDERS, AND OTHERS.
ENCAUSTIC, VENETIAN, BATH, and other PATENT TILES, and MOSAIC PAVEMENTS, may be obtained at MINTON and Co.'s Warehouse, 9, Albion-place, Surrey side of Blackfriars' Bridge. Also, an assortment of Plain and Ornamental Door Furniture, Slabs and Tiles for Fire-places, &c.

WORCESTER ENCAUSTIC TILES.—Specimens of these Tiles in great variety, both glazed and unglazed, may be seen, and every information obtained at the London Agents, Messrs. GREIVE and GRELLIER, Marble Wharf, Belvidere-road, near Waterloo-bridge, and Mr. SAMUEL CUNDY, Belgrave Wharf, Pimlico.
N.B. The price has been very much reduced since March last. Orders executed as above, or at the works of Messrs. F. ST. JOHN G. BARR and Co., Palace-row, Worcester.

TO BRICK AND TILE MAKERS.
THE AINSLIE BRICK AND TILE MACHINE COMPANY (James Smith, Esq., of Deanston, chairman), invite attention to their IMPROVED BRICK and TILE MACHINES, which are to be seen at work at Alperton, and at the Company's office, 193 A, Piccadilly, from 10 A.M. to 5 P.M. Mr. Robert Scrivener, who has been appointed manager in the room of Mr. John Ainslie, will shew the Machines at the works at Alperton, which is within a mile of the Sudbury-station of the London and North Western Railway, and two miles of the Ealing-station of the Great Western Railway; also at the Polytechnic Institution, Regent-street, London.—All communications to be addressed to Mr. WILLIAM GORDON, Secretary, at the office of the Company, London, 193 A, Piccadilly, March 1, 1847.
These Machines may also be seen at Mr. SLIGHT'S, Leith-walk, Edinburgh; Mr. LAWRENCE HILL, 135, Buchanan-street, Glasgow; Mr. ROBERT CHARLES, Mill-hill, Leeds; Messrs. PENNY and FINCH, Penkridge, Staffordshire; and Messrs. DRUMMOND and SON, Dublin.

EMBOSSED GLASS.
EDWARDS and PELL, 15, Southampton-street, Strand, Embossers, and Ornamental Glass Painters, are prepared to execute every description of Work in the best style and on the lowest terms: Embossed Borders from 6d. per foot run. Architects and Builders are respectfully solicited to inspect the patterns which are always on view, and will be found equal to any in London. As the work is done on the premises, EDWARDS and PELL can guarantee its being properly executed.

(PROVISIONALLY REGISTERED.)
THE ALBION PLATE GLASS COMPANY.—CAPITAL, £100,000, in 4,000 shares of £25 each.—Preliminary deposit, 2*l.* 6*d.* per share, until complete registration.

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In the year 1836, the manufacture of Plate Glass in Great Britain was about 7,000 feet per week. The Sales are now about 70,000 feet per week, exclusive of Foreign. The demand is increasing beyond all precedent, and although some of the houses are working night and day, the supply of good quality is still inadequate for Home consumption alone.
From 1827 to 1847, the reduction in price has been from 12s. to 5s. per foot, or 60 per cent.
From 1827 to 1847, the increase in consumption has been from 5,000 to 70,000 feet per week, or 1,400 per cent.
This Company has been formed to afford a better, and, if possible, a sufficient supply, and thereby to revive and encourage the Export trade in this article, which might be carried to an enormous extent, but which in the present state of supply and demand is grievously neglected.
The profit now realised in this manufacture in England is about 20 per cent., but the present Company, by a superior application of Machinery and the adoption of important scientific improvements (to be patented for their especial benefit) will be enabled not only to construct their works at little more than half the cost of similar undertakings, but also to carry them on at a decreased permanent charge. And by these means this Company will be placed in a position of vast superiority over any existing establishment.
Freed as this rising trade now is from excise restrictions, and looking at the extraordinary results that have already arisen, it is impossible to foresee either the extent to which this manufacture may be carried, or the full amount of advantage to be derived from its more extensive development. Nor is it unworthy of remark that in this country slabs of the finest plate Glass may be produced at a cost considerably below that of statuary marble.
The locality of London presenting peculiar advantages, arrangements have been made for the Purchase of an Eligible Site of Freehold Land on the Banks of the Thames, and other important steps are taken whereby the Works may be completed, and in full working operation within Twelve Months.
This undertaking is brought forward not only as a safe and extremely Valuable Investment for Capital, but also as one which the Public Interest imperatively demands, and a large Amount being already subscribed, the remainder will be apportioned to respectable Parties, who may apply to the Secretary, at the Offices of the Company, No. 4, Railway-place, Fenchurch-street, where, or of the Solicitors, No. 23, Great Tower-street, Prospectuses and and any further information may be obtained.